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The Inside Story of the Apple

Part 1—The Leaves and Their Uses

by J. R. Magness

THIS is the first of a series of articles on "The Inside Story of the Apple." It will be followed by such subjects as Fruit Bud Formation and the Development of the Fruit from the Blossom to Mature Fruit. These articles are very fundamental and wide in their application and will be looked forward to with great interest by every reader of the American Fruit Grower Magazine.

IT WAS about 300 years ago that an old Dutch scientist, Van Helmont by name, planted a willow branch weighing about 5 lbs. in a tub filled with dry weighed soil. He watered the soil only with rainwater, which contained practically no mineral matter. After the branch had grown to be a small tree, weighing nearly 200 lbs., he carefully removed it from the tub, dried the soil as he had at the beginning of his experiment, and again weighed the soil. Imagine his surprise at finding that the soil had lost only about two ounces in weight! The tree, even if absolutely dry, weighed many pounds more than at the beginning of the test. He decided that water must be the main substance of which the tree was made. We now know that this was a mistake but we cannot blame him for his error for at that time practically nothing was known of the great part played by the leaves in the nutrition and growth of plants. Van Helmont's experiment proved one thing very conclusively, namely, that the substances of which a tree is built are not primarily substances derived directly from the soil.

We now know that the primary building materials of plants are formed from a combination of water taken in from the soil and carbon dioxide gas taken in from the air through the leaves. In an apple fruit, for example, the total material from the soil other than water includes about 1/300 part of the weight of the fruit. Water totals about 85 per cent of the weight of the fruit, practically all the remainder, which includes sugars, acids, and the pulp or fibrous tissue, is built of materials formed in the leaves.

For these reasons, it is important that the fruit grower understand the work of the leaves if he would really understand conditions in his fruit trees. It is safe to say that the leaves constitute the best guide that we have to conditions in the orchard. The products formed in the leaves largely determine the formation of fruit buds, the vigor of the blossoms, the amount of fruit that sets, and the size of individual fruits.

About a hundred years ago the actual function of leaves was first discovered by some of the French scientists. They found that if animals were placed in an air tight container they would die after a short time due to the exhaustion of the oxygen from the air and the accumulation of carbon dioxide. This latter gas is given off when animals breathe, when wood, coal, or oil burns, and whenever any substance which once was living decays. These men found, however, that green plants placed in such a container after the air had been contaminated by animals soon purified the air, provided the containers were transparent and were kept in the light. Plants in the dark in such containers would not purify the air but would themselves cause the fresh air to become so impure that animals could not live.

As a result of these experiments, it was discovered that green plants when exposed to light would take up carbon dioxide from the air. This carbon dioxide is combined in the leaves and other green parts of plants with water from the soil. Oxygen is given off into the air and sugar, starch, etc., is formed in the leaves. The energy of sunlight is in some way used in this process for it will occur only in the light. The exact steps in the process are not definitely known, even though years of careful scientific study have been devoted to them, but it is known that this process is constantly going on and that it is the most fundamental process in all nature so far as the food supply of the world is concerned. Even the coal and oil deposits represent the results of this process—the sunlight's energy held in the plant in the form, first of sugars, then of wood, and finally stored in the earth through the ages.

Structure of Leaves.

On the surface of practically all leaves, particularly on the under side, there are thousands of minute pores or openings to the inside of the leaf, termed stomata. In fresh air, the carbon dioxide is always present in small quantities, usually about three parts in 10,000 parts of air. This carbon dioxide passes into the leaves through these numerous small pores. In cells inside the leaf, the green colored matter, known as chlorophyll, is held. Water also comes into the leaves, passing up from the ground through the new wood, then out through the veins of the leaves, and finally to the very cells containing the green substance. The carbon dioxide and water thus come together about this green substance and in the presence of light are changed into sugar, with oxygen being given off.

As sugar accumulates in the leaves, starch begins to form. Starch and sugar are freely interchangeable in plants, starch readily forming from sugar, and when once formed readily turning back to sugar again. Tests have shown that in early morning there is practically no starch in leaves; then as sugar is manufactured during the day, there is a gradual accumulation of starch, until by night the cells of the leaf are full of it. During the night no sugar is formed due to the absence of light. The starch disappears from the leaf, being changed back to sugar and carried out into the twigs and stems, where it is used in the growth of wood, of buds, of fruit, or is stored for use later on. Sugar, being soluble, is the form in which the food material is moved through the tree, starch, being insoluble, is the form in which it is mainly stored.

Distribution of Leaves on Apple Trees.

All the leaves on apple trees are borne on the new or current season's growth. At first thought, this statement may seem contrary to the well-known fact of leaves being on old spurs, but the leaves develop only on the new growth of the spurs. A point of great importance, also, is the fact that to a considerable extent the leaves on any spur vary in size and number with the amount of growth the spur makes. Thus a spur which does not grow at all will form no leaves, one which pushes out only about one-eighth of an inch in a season will on the average have only two to four small leaves, if the spur grows one-half inch or more it will probably bear six to eight, or even more, large and vigorous leaves.

On the longer growths, the leaves are produced singly on the stem, with the more vigorous leaves toward the terminal. Frequently the leaves near the base of such shoots drop off in midsummer, while those toward the tip remain vigorous until cold weather kills them in the autumn. This is of importance in view of the fact that the buds near the base of such shoots usually remain dormant during the following season while those formed near the tip push out into vigorous spur or shoot growth.

From the above discussion, it can be seen that growth in the tree as a whole is essential to the production of a suitable leaf area. Not only a growth of terminal shoots but growth of the individual twigs and spurs all through the tree is essential to the development of these food manufacturing organs. Very slight growth means few and small leaves. The desirable type of growth is one which results in all parts of the tree, all branches, twigs and spurs putting on a moderate amount of growth each season.

Growth is, to a considerable extent, controlled by the intake of materials—water and mineral substances—from the soil. While the total mineral supply needed to grow a tree in proportion to the size of the tree is very slight, still it is absolutely essential. It is, by maintaining a proper balance between the mineral intake from the soil and the sugar and starches, termed carbohydrate materials, from the leaves, that the orchardist can maintain his trees in the best condition to bear regularly and to produce fruit of good size.

The Mineral Intake From the Soil and the Nutritive Balance.

But water is not the only substance which the trees must secure from the soil. Careful tests of growing plants in distilled water or in pure sand, which contains no mineral plant foods, have shown that all plants require seven substances which must be taken in as minerals from the soil. These substances are nitrogen, phosphorous, potassium, calcium, sulphur, iron, and magnesium. It is true that these substances are needed in comparatively small amounts, yet if any one is entirely lacking, the plant will not grow. Fortunately, all natural soils contain some of all these substances. So far as apples are concerned, most of these materials are usually present in ample amount.

Iron and magnesium are apparently always sufficiently abundant in soils for the needs of plants. In the plant they enter into the formation of the green substance, chlorophyll, which plays such an important part in food manufacture.

The exact part played by potassium and calcium, or lime, in plant growth is not well understood. Calcium or lime sweetens the soil and has a great effect upon soil texture and is thus indirectly beneficial to plant growth. Both calcium and potassium also enter into the tree itself, however, and are indispensable to growth even though we do not know their exact role. While both calcium and potassium have proved of great value for fertilizers of certain crops, their use in apple orchards, however, has usually failed to give beneficial results. It may be important to use lime in orchards in order to get clover or alfalfa established, but it usually has little beneficial effect on the trees themselves.

Phosphorous, sulphur and nitrogen all enter directly into compounds in the plant which make up a part of the very life substance of the plant. All enter into the formation of proteins—important alike as plant and animal food—and are present in every living cell or tissue.

Sulphur probably is present in sufficient quantities in most orchard soils for the needs of fruit trees. Considerable quantities are added each year

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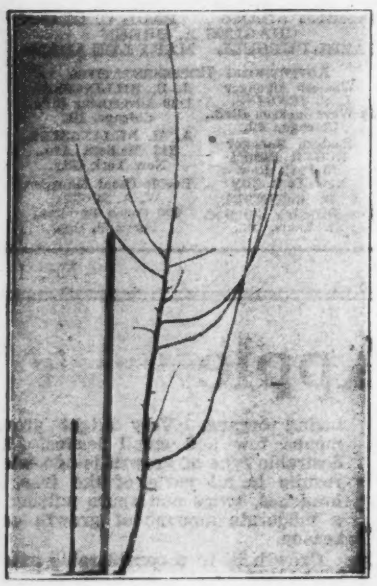
The Long or High Renewal System of Pruning

by Clayton L. Long
Oregon Agricultural College



Building a scaffold branch before pruning.

THE LONG or high renewal system of pruning has taken a real foothold with the orchardists of the Pacific Coast. The Rogue River Valley of Oregon has adopted it and put it into practice in more than 90 per cent of her orchards. The Oregon side of the Walla Walla Valley is using the system to an equal extent. It has a substantial hold in Hood River and is gaining rapidly. The Willamette Valley growers are using it very extensively. The Umpqua Valley growers were a little slower in getting started but after being shown by the Oregon Agricultural College Extension Service demonstration what it meant to their prune industry alone, they are adopting it more rapidly than any of the former valleys. California has the method pretty well established in her deciduous fruit growing districts, although none of them have accepted it to the extent that the Rogue River Valley and the Oregon Walla Walla Valley growers have. Washington growers have their ears to the ground. An Oregon man explained the system to the horticulturists and growers at the summer meeting of the Washington State Horticultural Society. The Western Washington Horticultural Society have a bid in for the same speaker to appear upon their winter program at their annual meeting. Idaho is practicing the method to a certain extent. Weiser and Payette growers in large numbers have crossed the Snake River to attend the pruning demonstrations on the Oregon side. Utah horticulturists came to the Northwest conference with the "long arm system of pruning" uppermost in their minds for discussion. The British Columbia orchardists are very much interested in the new type of pruning. Inquiries from fruit producing centers farther east show a growing interest all over the country.

What Is the Long Arm System?

Just what is this system of pruning anyway? How does it differ from the old methods of pruning? Where is it better than former methods and why are the fruit growers so rapidly adopting it? These are a few of the many questions asked concerning the system.

Let me make a few introductory remarks before trying to explain the method. A fruit tree is the result of its environment just the same as any other tree or plant. If the soil moisture is short due to shallow soil or low rainfall, the tree is dwarfed and reaches bearing size earlier than if the soil moisture was plentiful. If the soil fertility is low the same thing happens. Large trees and high yields are always accompanied with good soil moisture and fertility. Distribution of light to all leaf bearing parts of the tree is just as important or even more so than soil moisture and fertility. Good growth and large yields are brought about only by the proper soil moisture conditions and proper relationship existing between the "soil foods" (the efforts of the root system in its environment—the soil) and "air foods" (the efforts of the leaf system in its environment—the air and light). This soil moisture and relationship are largely controlled by the common orchard practices. The system of orchard management adopted for any orchard should be primarily for adjusting and controlling these two factors.

The Modified Leader.

The type of tree which seems to go hand in hand with the long system of pruning is the modified leader tree, a type of tree worked out and popularized by the former chief of the Oregon Agricultural College horticultural department, C. I. Lewis and his able staff. This tree is built with its four to six main or scaffold branches distributed up and down, as well as around its center or trunk, which is encouraged to extend from 2½ ft. to 5 ft. above the first scaffold branch. This places the scaffold branches from 6 to 12 in. apart up and down the trunk, and adjoining branches at least one-third of the way around it. As many scaffold branches are selected on this central trunk as are properly distributed each year until the desired number is secured. If a prevailing wind exists, the lead or trunk itself is forced to make the topmost scaffold by cutting off all the side growth towards the wind, allowing the weight of the growth on the other side and the force of the wind to pull it into place. Where the wind cannot be harnessed, the desired number of scaffolds are selected and then the lead cut back rather severely for a season or two and then removed by cutting it out just above the top scaffold branch.

The long system of pruning comes into play largely in the building of these scaffold branches. No heading back is practiced excepting where one or more of the scaffolds are greatly outgrowing the others and then just enough to head back the strong growers to fit the others. The midrib or lead in each scaffold branch is always retained and now cut back to a more spreading lateral. The old idea of pruning to a lateral in a young growing tree to make it broad and spread-

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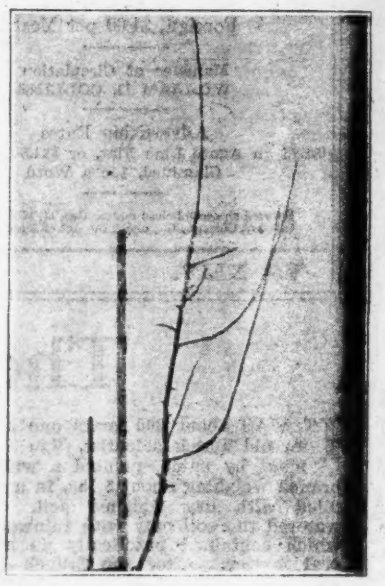
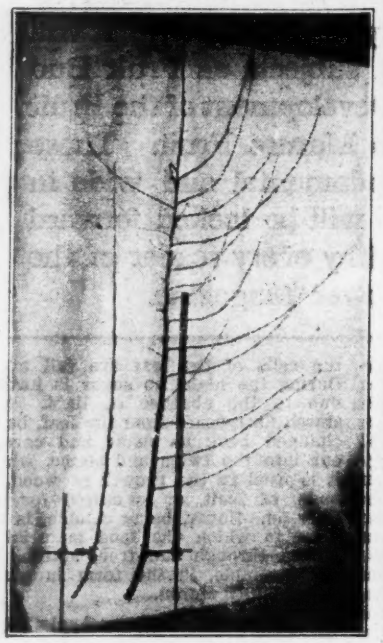
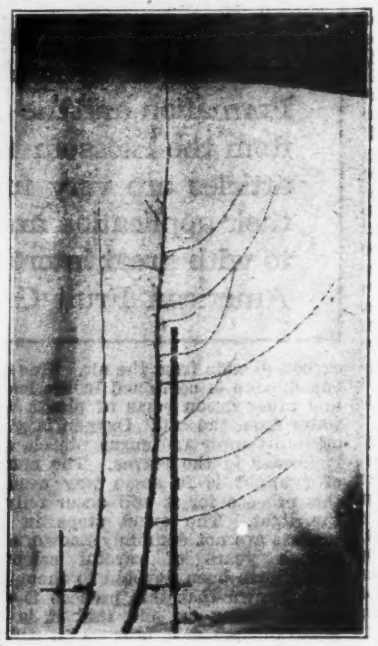


Building a scaffold branch after pruning.





If scaffold branches are all making about the same growth, do not head any of them back; they will put out plenty of side branches without heading back. Left, before pruning; right, after pruning.

Spitzenburg long pruned since three years old, producing heavy crops of well-colored apples.

Spitzenburg same age, same soil, but pruned by the old heading back method, produced very light crops of poorly colored fruit.

Frost and the Fruit Grower

by M. J. Heppner
University of California

IT IS not the object of this article to give a treatise of methods involved in protecting orchards against frost, but merely to give a brief discussion of how frost is formed, the manner in which it causes injury to fruit buds and methods generally used in forecasting frost.

The term "frost" is now generally accepted as meaning the moisture of the air condensed on plants or other objects near the surface of the earth. It is obvious, therefore, that the temperature of the surface on which frosts form must be at or near the freezing point. Injury from frost occurs when ice is formed in the intercellular spaces of a plant. As a result of this, the temperature of the plant is the determining factor and not the appearance of any deposit of frost on its surface. Of course, when frost forms on the surface of a plant it is good evidence that the exterior of the plant is at or below the freezing point of water, but if the temperature at which condensation of moisture in the air takes place is below freezing, as is frequently the case, ice may form in the intercellular spaces of the plant and destroy it without any frost deposit appearing on its surface.

Frosts occur on still, clear nights, and are more or less local; freezes are usually accompaniments of storms, often of high winds and are general or even continental in range and their courses are not marked by the whiteness of frost. Freezes are mostly beyond the reach of man.

Freezing of Plants.

All the phenomena involved in the freezing of succulent and other plants depends on the condition of the protoplasm or living matter in the plant cell. If the temperature is sufficiently low to cause a chemical disorganization of the living substance, the part of the plant where this takes place dies. If, on the other hand, no actual disorganization of the cell contents occurs, the affected parts may recover. Under the influence of cold the water in the cells escapes, and may be frozen either in the spaces between the cells or on the surface of the leaf, stem or whatever the part may be. As the temperature rises, this frozen water may again be taken up by the cells, and in such cases little or no injury results. If for any reason, however the cells are not able to regain the water withdrawn by the cold, injury or even death may result. In many cases the rapidity with which the ice is thawed has a marked effect on the ability of the cells to regain their normal condition. If the thaw is gradual, the water is furnished no faster than the cells can absorb it, and equilibrium is therefore soon restored, the chemical processes which were checked during the freeze are resumed and the plant soon regains its normal condition. With a rapid thaw, however, the cells are not able to take up the water as fast as it is furnished, and, as a result, chemical decomposition sets in and death follows. Death in this case is essentially the same as that which results from drought. The cell loses water to such an extent that it is not able again to become turgid, and, as a result, it finally withers and dies.

Frosts Recorded in the Country a Safe Guide.

It is well known that the air over cities, particularly on clear nights when frost is likely to occur, almost invariably is warmer than the air over the open country.

Yellow Newtown long pruned since it was three years old.

Arjou pear which has been long pruned for three years.

The higher night temperature of cities is attributed mainly to the heat given off from buildings and pavements, and to the effect of smoke from the many city fires, which collects over cities on quiet nights and, by retarding the escape of heat from the surface, tends to hold the air at a higher temperature than would be obtained otherwise. For this reason, records of frost made in large cities cannot be regarded as a reliable guide to the occurrence of frost in the open country. We can get a good idea of the heat absorbed by buildings, streets, etc., during the day by noticing that the sunny side of the street will be dried after a heavy fog or dew long before the sun arises. This is due to the heat absorbed during the previous day.

The observations of frost and the temperatures recorded by co-operative observers of the Weather Bureau who, in the main, are located in the open country or in small villages, may be considered as representing very closely the conditions that exist on the farm.

The instruments used by co-operative observers are carefully standardized and their exposure is as clearly uniform as possible. The thermometers—a maximum registering the highest temperature in each 24 hours, and a minimum registering the lowest—are exposed in shelters of standard construction so that the results are strictly comparable. Generally, the thermometers are placed about 4 ft. above the ground and their readings indicate the temperature at that elevation. This is not the temperature of the blossoms of the trees as they are usually over 4 ft. from the ground. Although a freezing temperature may be recorded at 4 ft. from the ground, it does not indicate that that is the temperature of the intercellular spaces.

Three Degrees of Frost Registered.

It is the practice of observers connected with the United States Weather Bureau to record three degrees of frost—light, heavy, and killing. A light frost is recorded when only the tenderest plants are injured; a heavy frost, when the injury is more marked and the hardier plants are damaged; and a killing frost, when the staple products of the region are injured severely or killed.

Repeated experiments have shown that the greater the sap density of a plant the lower the temperature that plant is able to stand without injury. It has been shown that twigs of fruit trees that are immersed in solutions of cane sugar or glycerine will withstand a greater degree of cold without being injured than twigs immersed in water. This is because the twigs take up the solutions in which they are immersed and have the sap density reduced or increased according to the density of the solution in which they are immersed.

Fruit buds have a protective covering over them, supposedly for the purpose of checking evaporation, but this is not sufficient to keep them for any appreciable length of time at temperatures different from the surroundings. During a freeze in the orchard, where the temperature is falling slowly from sundown until sunrise, there is little doubt that the fruit buds take on the resulting temperature of the surrounding air.

Factors Which Influence the Amount of Damage.

The factors that influence the amount of damage done by freezing and which need to be controlled are: Kinds of buds; stage of development; duration of the freeze; rate of thaw; the humidity; the minimum temperature.

The loss of heat that brings the temperature of plants to the freezing point occurs in two ways: First, loss by conduction, and, second, loss by radiation. Loss of heat by conduction occurs when the air in contact with the plant is colder than the plant itself. This allows the heat to flow directly from the plant into the colder air about it. Frosts due to this cause alone result almost invariably from the importation of large masses of cold air brought down from the upper atmosphere by descending currents, or from higher latitudes by northern winds, both of which movements usually are active when the weather clears after a storm.

Radiation of Plants.

Frosts, particularly in the late spring or early fall, result also from loss of heat by radiation. Plants radiate heat almost continually. During the day more heat is received by them from the sun than they give off, and the plant becomes warmer. At night plants pour more heat into the atmosphere than they received from it, hence they become colder.

Radiation proceeds most rapidly when the sky is clear and the atmosphere is quiet. Clouds check radiation because the heat given off from the earth does not penetrate them easily. A quiet atmosphere allows the colder, therefore heavier, particles of air to settle to the surface of the earth. Thus on quiet, clear nights, when frost is likely to occur, the air near the ground may be 10 degrees colder than the air 10 to 15 ft. above the ground. The wind, by stirring up the atmosphere, prevents the settling of the cold air, and in this way maintains the stratum of air near the surface at a uniform temperature.

Frost results seldom from conduction or radiation alone. Both usually are active when frost occurs.

The weather map is based on observations of pressure, temperature, cloudiness, wind and precipitation, made at many places scattered over a large area. The Weather Bureau issues frost warnings when frosts are indicated for any part of the United States. The warnings are distributed by mail, telegraph and telephone. They are telegraphed at government

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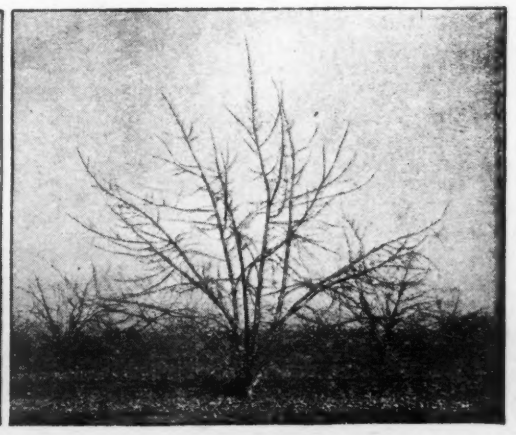
Gravenstein long pruned since it was three years old.

Italian Prune which has been long pruned for three years.



Grimes Golden after it has borne a few full crops, long pruned since three years old.

Our Editorial Comment

Color in Apples

A BRIGHT high color is very desirable in apples. In the first place, it is indicative that the apple has been grown under congenial conditions. High colored fruit, everything else being equal, is apt to be of good quality. Again, the bright, highly colored apples take well on the market. They are kindly received by the buyers and command a premium.

There are phases of chemistry and plant physiology which enter into the development of color in apples but which we will not attempt to discuss in this editorial. We will simply deal with some of the factors which the grower comes in contact with in his everyday orchard experiences and which have an influence on the development of color. Natural surroundings play a very important part, that is, an apple cannot be taken to regions to which it is not naturally adapted and developed to a degree that high color can be easily secured. There are zones or belts for each variety. Climate is a very important factor. When seasons are unusually hot, and especially when the autumns are warm, not only during the daytime but during the night, color is lacking and what color develops is apt to be dull and unattractive. Regions which have long growing seasons and very bright sunlight are apt to develop color more easily than districts not so fortunate. Differences in temperature between day and night, especially in the late summer and early fall, have an influence. A few snappy frosts and cool nights seem to bring the color on rapidly. A few good short rains also help color very materially. Then there is the fact of soil. Everything else being equal, heavy soils discourage the development of the highest color, while light soils are apt to encourage it. Then there are red strains of some varieties. We are all familiar with the red strain of the Rome which is now being pushed to the front. The Gravenstein is an apple which has always been noted for its tendency to produce red strains, the Banks being one of the well-known red Gravensteins. The Duchess and Red Astrachan also have red strains, as well as other varieties—not that these things occur very commonly, but they do occur and the red types will insure more color than can be expected from the older strain.

Probably, however, one of the greatest factors in color development in apples is the proper balance between water supply and nitrogen. In many of the western orchards irrigation has been practiced for years. Alfalfa has been grown among the trees. Nitrogenous fertilizers have been used very liberally. The trees have been so handled to produce heavy crops, some varieties ranging from 500 to 1000 packed boxes per acre. Possibly this practice has been carried too far. It may account for some of the lack of color which some of the irrigated districts have been experiencing the past two years. Perhaps not pushing the trees quite so hard, cutting down somewhat the supply of water and nitrogen, may bring back the color in a relatively short time.

In a large number of the non-irrigated orchards, while the fruit may color up and develop a deep red, the color often lacks in life and brightness and attractiveness. A deep dead color is not necessarily desirable—it is the color with the life and brightness which the trade desires. In such orchards, investigation would probably show that the practices are such that there is not sufficient water and nitrogen to develop the desirable color. In many of these orchards much pruning is needed, the fruit that is colored being entirely on the outside and top of the tree and that on the inside nearly colorless. A moderate amount of pruning, well distributed through the trees so as to allow some light to penetrate and air to circulate, would encourage the development of color.

There is a very popular belief that potash is the great element which produces color. However, careful experiments conducted by many investigators have not shown that this is true. A lack of balance between nitrogen and water is more apt to influence color than the amounts of potash in the soil. Many of our fruit districts have soil fairly rich in potash, which may account for some of the results which have been obtained. There are many places where potash may give good general results in combination with other fertilizers; but the nitrogen and water supply need constant watching. Upon proper correlation much depends. If the proper balance can be maintained, not only will good crops be secured but the fruit grown will be large and well colored. It devolves upon each orchardist to study his own local conditions and to so conduct his orchard practices that he has reasonable control of the water and nitrogen supply. When he secures such a control, the results which he will secure will be satisfactory.

Small Canning Factory

MANY communities become enthusiastic over the establishment of a small canning factory. Unfortunately, a very large percentage of such adventures ultimately prove to be failures. During times of booms, when there is more demand for canned goods than the canneries can supply, the small cannery becomes very prosperous, but when conditions let up somewhat and the market is slow and the margin of profit very narrow, the small cannery suffers. It is not in position to operate at a low overhead per case canned. Its unit costs for canning become very high, which makes it almost impossible to compete at times with the very large plants which, with a low overhead, can put up goods at a very small unit cost. Again, the small cannery rarely has capital to renew machinery frequently, to put in labor saving machines as they are placed on the market in order that unit costs can again be reduced. It is often in the marketing, however, that a small cannery finally fails.

It probably would be possible for a string of small canneries to unite on a common marketing basis in such a way as to be able to compete with the larger canneries. It used to be said a few years ago that no cannery could operate successfully that did not put up at least 50,000 cases annually. Possibly more than that is required at this time. At any rate, those who are considering investing in small canneries should look into the question very carefully. It takes much money for sugar, cans, labor and shipping cases before any return is received for the goods. Many communities in establishing a small cannery have raised only sufficient capital to build the plant and buy the machinery and have little or no working capital. Everything being equal, the larger the plant, the greater the output, and the better the financial backing, the more likely is the venture apt to be a success.

An Inventory

NEARLY every business man, and, of course, all mercantile establishments, make an annual inventory. It is absolutely essential to good business practice. Orchardists will generally find it profitable and to their advantage to make an annual inventory. In January is a good time to do it. If you have not been keeping an inventory, you will soon be surprised to learn how tools on your farm are disappearing. Pruning saws, knives, ladders, picking utensils, lug boxes, general tools such as hammers, wrenches, etc., disappear to an alarming extent. Where did they go? Has some of the help been careless and left them around the orchard? Have they possibly been loaned without record kept, or maybe they have been stolen. Some growers number their equipment and during the rush period, such as harvesting, they give the help numbers corresponding to the numbers on the ladders, picking utensils, etc., checking up each night to see that everything is returned. By keeping an inventory, much of the loss will soon be stopped and the grower will learn what his natural depreciation is on the various kinds of equipment, and this is essential to good business. In making an inventory, a fair amount of depreciation should always be made on such equipment as spray machines, wagons, tractors, trucks, etc. This should be charged up to the operating expenses of the orchard.

The second form of inventory, which perhaps is even more valuable than the first, is the inventory on the results obtained in the orchard as regards yields, grades, etc. Did your pack this year show too large a percentage of low grades? If so, from what causes? Is your pack averaging up with other growers in your state or community? If not, why not?

One of the great advantages of the co-operative movement is that growers soon learn to take an inventory on the fruit that they grow and they find that they are often not up to average in production. This spurs them on to better methods, to a change in orchard practices, which results in much good. Even though you may not belong to an association, you can, nevertheless, study this subject to your great benefit. January, the quiet month of the year, is a pretty good time to make these inventories.

Auction Marketing

THERE is no question but what the interest in the auction system of selling in this country is greatly on the increase. It is to be noted that the buyers and handlers in our large cities are taking more and more interest in the auction. The California Fruit Growers' Exchange has recently adopted the auction system in some cities where heretofore they used private sales.

The establishment of the f. o. b. auction system this year has aroused considerable interest and is being watched carefully by the entire fruit trade. Also, the establishment of new large auction companies in some of our large centers tends to show the drift toward the auction movement.

Unfortunately, in the establishment of some of the auction companies, a bitter fight has been engendered, which will result, temporarily at least, in sales being made at lower figures, and in this case, as usual, the poor producer at the other end must pay the price. Ultimately, however, some good may come from it if a larger tonnage of fruit can be moved and trade and buying stimulated.

There are fruit men in this country who are now predicting that within a relatively short time a very large percentage of the fruit and vegetables consumed in our larger centers of population will be bought almost exclusively through the auction marketing channels. There are others who feel that this view is too rosy, that while the auction system will grow to a certain extent, there will always be a large percentage of the fruit sold through private sales. We must admit, however, that the auction system at present is increasing in favor and is increasing quite rapidly in this country.

Some Grapes for the Home Vineyard

by J. H. Gourley
Ohio Experiment Station

THE GRAPE is unique among the fruits, that is, it takes hold of the imagination and occupies a sort of classic position in the culture of a people. The vine is coupled with the fig tree in biblical literature and metaphor after metaphor find their way from this source into modern writings. Other fruits play some such role also but cannot be compared with the "vine and fig tree."

But if this fruit has occupied a unique position in the past, what can we say of it at present? It stands out alone, not only because of the extensive plantings but because of the type of individuals who are planting it. Grape growing seems to appeal to the same instinct that makes a man want to play the stock market or bet on a horse race; it has in it the near possibility of making some money. But this view does not appear to be shared very fully by the experienced grape grower in the east; he is steering a more moderate or central course. A few of the highly specialized sections are still planting it extensively, as mentioned later, but frequently the individuals who formerly grew grapes exclusively are now going in for some diversification of fruits and truck crops. This is true in particular near the larger cities.

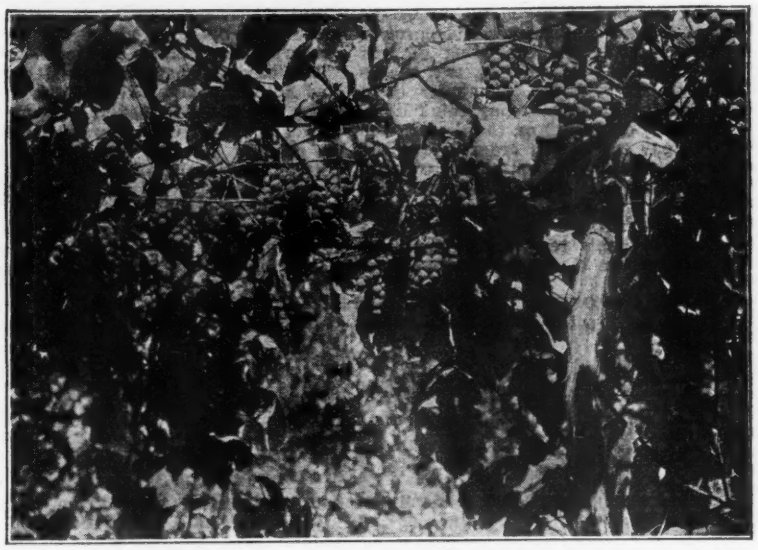
Grape Regions.

The highly specialized grape regions in the east are found in New York, Michigan and Ohio, with some important regions in several of the other states. In the belts in New York, known as the Chautauqua, Central Lakes and Hudson River, there are from 10,000 or 12,000 up to 35,000 acres; in Michigan there are two southern counties—Van Buren and Berrien—that have about 18,000 acres; and Ohio has its vineyards well distributed over the state, but the heavy plantings are east and west from Cleveland, with a total acreage in the state of about 14,000 or 15,000 acres, and rapidly extending.

Varieties.

Unlike the case with other fruits, there is not a long list of almost equally good varieties from which to select when one is contemplating a commercial vineyard. To be sure there is a long list of very good varieties but only a few have stood the test of time for market grapes. In the first place, just as red is the dominating color for apples so is it blue for grapes, and when the sagacious Ephriam Bull discovered and saved for posterity the Concord grape, he struck twelve, for it has not been equalled or surpassed, if the acreage devoted to it is a fair test. In the north and east of the United States and southern Canada, the prevailing variety is Concord—probably 85 to 90 per cent of all sorts grown would be a very nearly accurate estimate. When a white one is desired, it is likely to be a white Concord-Niagara. Delaware is still popular and Catawba prevails in a very few locations. This latter is a grape of very characteristic flavor and of high sugar content when well matured. It formerly would bring around $60 per ton for the making of champaign when Concord, Ives, Isabella and others would bring around $20 for wine purposes. Moore's Early, Campbell's Early, Worden, Ives, Brighton and a few others are still found in commercial plantings.

Of the new or less known ones much can be said, for surely there are several of distinct merit. Without attempting to name them in any order of preference or origin the following may be mentioned: Caco is a new one that has been on the market for a little more than 10 years. The writer has observed it for three seasons in a vineyard of over 200 varieties and from its behavior at Wooster, Ohio, it will rank as one of the best. It is a good grower; hardy; prolific; produces compact, well-formed and medium-sized bunches; color is a light amber red covered with abundant bloom, which gives it a rather dull, waxy appearance. The quality is excellent, sweet, rich, aromatic; flesh tender and it lacks any foxy or musky flavor, which is offensive to some persons. It is worthy of planting for home use or a fancy market. It ripens after midseason and remains on the vines in good condition late into the season.



A crop of Lutie grapes at the Ohio Experiment Station.

A cluster of Delaware.

Turning in the cover crop of rye in early spring.

Captivator is another of superior merit that has not been widely planted as a home grape. One might easily mistake it for a Rogers' hybrid and he would not be far wrong, for one of its parents was Herbert, one of the best of Rogers' productions. It is probably not hardy enough for extensive planting in the north but is worthy of a place in the home vineyard. It is a moderate grower; prolific; bunches vary in size and shape but average large; berries large, clear, light red; melting, juicy, and highest in quality. It ripens before midseason with us but extends up through the season of Delaware. When well grown one can only use superlatives in describing this delicious grape.

Eclipse is a blue grape of the Concord class but is smaller in size and ripens about three weeks earlier. It is of high quality, better than Concord, which is saying a great deal, and it makes a fine quality of grape juice. This variety is quite hardy and deserves a place in the home vineyard.

Lucile is a dark red grape of considerable merit. It is one of the most hardy and vigorous vines in our vineyard. The fruit is free of disease and for this reason, together with its hardiness, it makes one of the reliable sorts even where conditions are not very favorable. The fruit is of fair quality but rather seedy.

Hernito is an interesting seedling of Herbert, produced by Munson, in Texas. The vines are vigorous and fairly prolific, the berries are dull blue covered with whitish dots, the quality is good, with a very distinct, peculiar flavor. It ripened just before Concord and held up well in storage. The grape fancier will be interested in planting a few vines of this attractive grape.

Portland is one of the several very creditable productions of the New York Experiment Station. It fruited this year for the first time with us and supports all the favorable comment we have heard. It is an early green grape of the highest quality, being very sweet and of pleasant flavor. We would suppose it would be widely planted by the amateur and grape fancier. The Sheridan, which comes from the same place, is rated as an excellent black grape which ripens a week later than Concord, but we have not yet fruited it.

In addition to these few varieties that have been fruiting under the writer's observation, there is the list of Rogers' hybrids that are always worthy of note and stands at once as both a beacon light and incentive to future grape breeders. They are mostly self-sterile and hence must be planted with good pollinizers and are subject to black rot and mildews. As a result of these faults the bunches are often imperfect but when well grown they are **par excellence** among the grapes and can well be planted in the home vineyard. If not all can be included, we suggest they be selected in about the following order: Lindley, Herbert, Agawam, Salem, Wilder, Barry, Goethe and Massasoit.

A High Grade Product for the Market.

If the promiscuous planting of grapes is to continue, there will be a marketing problem of some importance when the vineyards attain maturity. It is to be hoped that a general "dumping" on the market will be avoided as has happened for so long with apples. This means that grapes must be handled carefully to avoid the excessive crushing that too frequently occurs and they must be properly ripened rather than put on the market before their sugar content is well developed. Likewise, the appearance of the grapes as regards perfect bunches and freedom from stings, rots and other blemishes is essential to commanding and holding a market in the east for the eastern grown grape. In

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Merchandising the Michigan Apple

by V. R. Gardner
Michigan Agricultural College

IT OFTEN happens that the fellow who "starts something," starts something that he cannot finish. This is very likely to be the case when the subject of marketing is opened. Everyone has his own opinion and generally it is a very decided opinion. On one point only is there general agreement among growers, namely, that existing conditions are not satisfactory. Even the distributors are inclined to agree with the growers on this point, though the specific troubles that they recognize may not be the ones that are uppermost in the minds of the producers. One man complains of freight rates and freight service; another that the grading law is not what it should be; another that the wholesaler, jobber, carlot receiver and commission man are more or less out to "trim" the producer; still another, that the retailer insists on too large a profit. Some even pass the blame along to the consumer, claiming that he doesn't pay enough attention to grade, variety or quality, or that he pays too much attention to these things, that he is unwilling to pay a fair price for apples, or that he shows poor judgment in eating so many grapefruits, oranges and bananas and so few apples. Whoever or whatever is at fault, the producer "holds the sack." In a general way, the distributing system is held to be too complex and distributing costs too high, though just what to do about it is quite another question, for it has been found rather difficult to put a finger on a definite or particularly weak spot in the system and suggest a workable remedy. The writer believes that one of the main reasons why criticisms that have been made, remedies that have been proposed, have not resulted in greater improvement is because they have dealt principally with the machinery, the mechanism, the methods of distribution, rather than with the conditions under which that machinery operates and over which it has little or no control. In other words, so many of the proposed marketing remedies are patent medicines that deal with the fever rather than with the germ or toxin that causes it.

The Distributor's Point of View.

Let us look at this question first from the standpoint of the distributors. We may not like their point of view, we may think it entirely wrong, and it may be entirely wrong; but be that as it may, the producer must deal with some kind of a distributor or distributing agency. That being true, it is just as important for the apple producer to understand the standpoint of the apple distributor as it is for the automobile or shoe or Christmas card manufacturer to understand the standpoint of those who distribute their products.

If there is any one principle more basic, more fundamental, than all others in merchandising, it is that **success lies in being able to sell people what they want, where they want it and when they want it.** No distributing system that long ignores this principle can expect to "get by." It may be regarded as the "constitution" for the sales department of any organization. There may be many by-laws, but the by-laws only seek to interpret the constitution.

What the Trade Wants.

The success of the Ford Motor Co. is built upon its manufacture of an article that people want and want badly (and, perhaps we may add, are able to pay for). The Heinz Co. is a going concern because its "57 varieties" are what people want in the pickle and catsup line. So the distributor finds it with apples. His trade calls for Jonathans, Spies, Greenings and a few others. Retailers know and demand them. It is the distributor's job to supply them. Consequently he is willing to pay more for carloads of these and other standard varieties than for mixtures of miscellaneous, little known sorts, no matter how excellent they may be. It requires no special effort to sell them for the demand for them already exists. Something else is regarded as — and must be sold as — a substitute, and people in general prefer the real thing to a substitute. The grower who loads a car consisting of half or two-thirds of one or two standard kinds and the remainder of a dozen inferior sorts, may think he is "putting one over" on the dealer, who may buy the car in order to get the standard varieties, but that grower is only "kidding himself along." He pays by taking a lower figure for the standard variety than otherwise he would probably receive. Fortunately, the situation that has just been described may be expected gradually to improve through the influence of the State Horticultural Society and other agencies in recommending only from a standardized list of varieties. However, it is often difficult to convince producers that the trade is more willing to buy freely of, and pay liberally for, the things the trade wants than for what the grower may choose to grow. It is well to remember that it is the eye that buys the fruit, the mouth only chews and swallows; and in the last analysis it is the eye of the consumer that finally passes judgment.

Parenthetically it may be remarked at this point that it is the retailer and distributor, not the consumer, who turns "thumbs up" or "thumbs down" for different varieties. The average consumer today does not discriminate between different apple varieties and probably never will. When the housewife goes to the grocery store or fruit stand to buy oranges, she does not ask for Valencias or Parson Browns or Ikedas—she asks for oranges; when she buys figs she does not ask for White Adriatics or San Pedros or Calimyrnas—she asks for figs; and when she buys bananas she does not ask for Martiniques or Jamaicas—she simply calls for bananas. The housewife or hotel steward or cafe chef, when wanting to buy apples, goes to the grocery store or picks up the telephone in the same frame of mind. These ultimate consumers don't any more know whether "Jonathan" means a variety of apple or a kind of cough syrup than the apple producer's wife knows whether Deglet Noor is a variety of date or a new pattern of Persian rug. Perhaps this situation is regrettable, but it exists. All these consumers know is that they want apples, good apples; and they leave it to the retailer to make the selection. This the retailer well knows and he knows also that, unless he supplies good apples, his trouble has just begun. It is because he knows Jonathans, Spies, Greenings and a few others to be good apples that he demands them of the wholesaler. He shies at the Calvert, the Fallawater, the Mann, because he does not know them, because he does not know how repeat orders will come in when once he tries them out on his customers. Furthermore, the retailer knows that the trade in general wants apples of the higher grades. One chain store official in Detroit—a chain store that operates about 500 retail groceries in that territory—says: "This city is what you would call a Red Apple Market. We find the Jonathans are the best seller. **The fancy apples are the best sellers regardless of price.**" In this connection, the grower can well afford to take to heart a lesson that any experienced retailer has long since learned. It pays to protect the consumer, to sell him only good goods, standard varieties. You can often slip him a substitute and pride yourself on having made a good sale, but it isn't a policy that brings in repeat orders and builds up the business. Michigan apple growers have a long way to go in this general direction.

TABLE I.—MONTHLY SALES OF APPLES (BUSHELS) BY SOME OF THE LEADING WHOLESALE HOUSES IN DETROIT.

Wholesaler No.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	200	500	1,000	2,000	1,500	1,000	1,000	800	600	400	400	...
2.....	...	300	675	800	1,000	1,200	1,350	1,000	800	500	200	...
3.....	...	100	200	400	500	500	500	500	500	300	100	...
4.....	...	2,500	4,000	5,100	6,000	7,650	7,650	7,250	7,000	6,750	2,700	...
5.....	...	200	250	300	325	375	400	375	325	300	200	...
Total .	...	3,600	6,095	8,600	9,325	10,725	10,900	9,925	9,225	8,250	3,600	...

TABLE II.—MONTHLY SALES OR CONSUMPTION OF APPLES (BUSHELS) BY RETAIL STORES OR RESTAURANTS.

Firm No.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	...	4,000	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	4,000	.....
2.....	100	400	400	300	300	300	200	200	200	160	100	.....
3.....	...	100	130	130	130	100	300	300	300	...	...	.....
4.....	50	400	600	800	1,000	1,000	800	600	500	300	...	.....
5.....	...	400	400	400	400	400	400	400	400	300	200	.....
6.....	20	100	200	250	250	300	250	250	210	100	...	.....
7.....	...	25	25	25	25	25	25	25	25	25	...	.....
8.....	3,000	9,000	15,000	21,000	21,000	18,000	15,000	15,000	12,000	12,000	9,000	3,000
Total.	3,170	14,425	23,265	29,405	29,605	26,625	23,475	23,275	20,095	19,325	13,200	3,000

Selling Easter Lilies, Kerosene and Apples.

The manufacturer and distributor of fireworks sees to it that his product is displayed for sale just before the Fourth of July; Hallowe'en specialties are offered to the public in October, Easter lilies in March or April, as the case may be. To try to force the sale of these articles at other times of the year would be folly. On the other hand the distributor of kerosene or molasses or matches makes no special effort to sell in January or June or November. The demand for his product is steady, continuous, or at least relatively so, and his selling campaign, or rather his method and system of distribution, must be adjusted accordingly. In every instance it is the job of the distributor to know all about the demand for his product, to see that his product is offered for sale when there is a demand for it; and his success depends in no small degree on his ability to anticipate that demand accurately from season to season, week to week, day to day.

How is it with apples? How many does the consumer actually want and when does he want them? What percentage of the apple crop is sold to eat out of hand? What percentage goes to the bakeries? To the restaurant and hotel trade? What percentage of our apples is cooked before being eaten? In the purchase of apples for cooking, how much of a premium, if any, is paid for color, for finish? What percentage of the apple crop does the consumer buy by the barrel?—the basket?—the peck?—the dozen?—the pound? Is it possible to stimulate the consumption of apples? If possible, is it going to be easier to stimulate the consumption of that class of apples bought by the pound, by the dozen or by the bushel? Is it more feasible to speed up consumption in September when grapes and cantaloupes offer formidable competition, or during February and March when the orange season is at its height? These are questions about which the average grower has little exact information; yet they are questions, the answers to which are extremely important. Can you imagine an industrial concern attempting to market a new commodity without a thorough canvass of where, when, for what and by whom it could be used and a selling campaign organized accordingly? Do you think the Sherwin-Williams Paint Co., the Bean Spray Pump Co., the manufacturers of Victrolas or of Manhattan shirts, or even the California Fruit Growers' Exchange isn't in possession of reliable information regarding all these features of its own business? In the space allotted me I cannot touch upon many of these questions. I shall attempt a fairly complete answer to only one of them—one of the most important.

When Does the Consumer Want Apples?

Some measure of the seasonal demand for apples is afforded by the sales made week by week or month by month by wholesalers to their retailers. Figures showing the volume of business month by month of a number of Michigan wholesale houses are given in Table I. In the first row are the figures for a Detroit firm doing a general fruit and produce business. These figures, like the others in the table, represent sales, not receipts. As will be noted, the volume of business rises rapidly from a low point in July to a peak in October, after which there is a gradual, though not rapid, decline until May. This dealer's peak season comes at a time when Michigan growers are making their heaviest shipments and were these figures the only ones available, they would suggest that in a general way consumption rises and falls with supplies coming in from the farm. However, the figures for wholesaler No. 2, another Detroit dealer, tell a quite different story. His volume of business during the late summer and early fall is relatively small, but a high peak is reached in January, with a heavy turnover through March and good sales continuing into May. Wholesaler No. 3 has a slightly smaller turnover, but a more even distribution of his business throughout the winter and spring months. His sales after January 1 exceed those made earlier in the season. Wholesaler No. 4, the largest dealer of those from whom figures were obtained, has a fairly even business in apples from September to May, with a peak season in December and January. The figures for wholesaler No. 5 are particularly interesting as this dealer sells largely to a lake boat and restaurant trade. Here again the greatest volume of business is transacted in January, but there is an almost equally great volume three months later as well as three months earlier.

These figures, furnished by Detroit wholesale houses, without doubt do not afford an entirely accurate measure of consumption month by month, for they do not take into account a large portion of the supply trucked in from nearby territory and sold direct to the retailer or consumer. However, it is during late summer and early fall that the largest supplies reach the market by truck, and, were accurate data on these supplies available, they would doubtless make still more evident the continuous, steady character of the demand for apples on the part of the ultimate consumer.

What the Furnace has Done to the Apple Business.

If anyone is in a position to say when the consuming public demands apples, it is the grocer. The first row of figures in Table 2 gives the approximate monthly sales of one chain store system in Detroit. This represents 80 retail establishments. The customers of these stores evidently call for about so many apples each week as

(*Continued on page* 29)

A Giant Who Works For You

There is a giant who works tirelessly to lighten the labor on the American farm, to make the farm more productive, and farming more profitable.

He is personified by the vast resources of the Ford organization, whose herculean labors are directed primarily toward lowering the cost and increasing the efficiency of Ford cars, Ford Trucks, and the Fordson Tractor.

The larger this giant has grown the lower the prices of Ford products have fallen, and the more valuable they have become from the investment standpoint as farm equipment.

To the farmer this has meant lower and lower farm costs, better arrangement of farming activities, more money crops, all with less effort and therefore with greater net profit—proof enough that it is to his interest to standardize on Ford equipment.

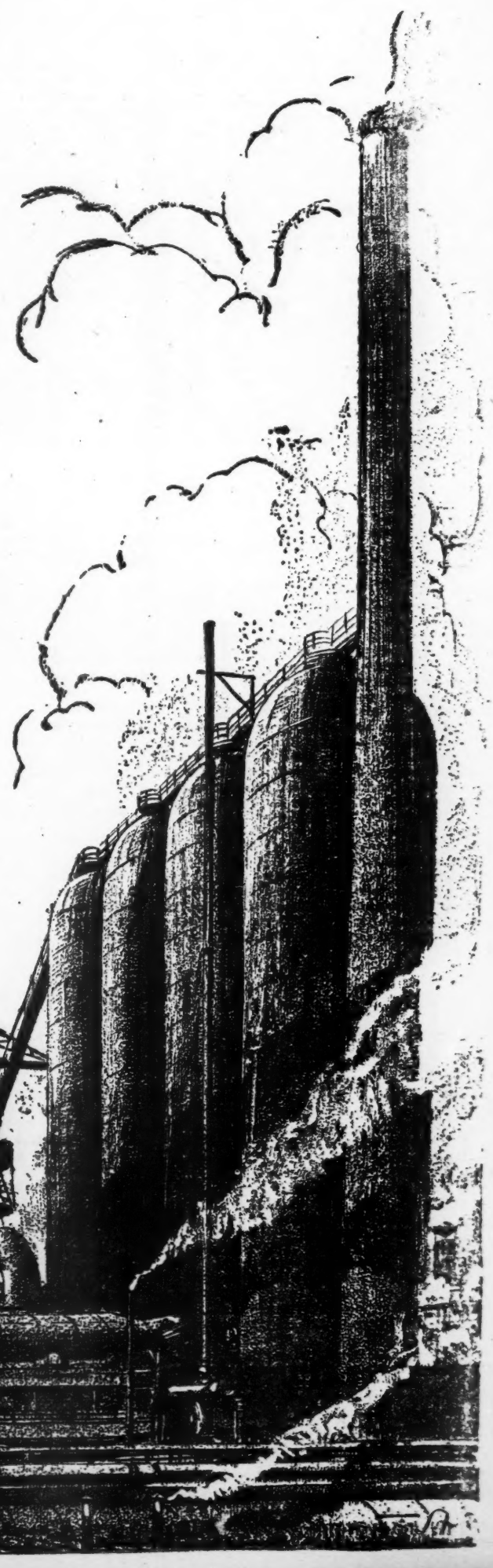
Ford Motor Company

CARS · TRUCKS · TRACTORS

Ask Any Ford Dealer

Ford

THE UNIVERSAL CAR



Ford River Rouge Blast Furnaces produce twelve hundred tons of molten iron a day.

Wire Bracing of Fruit Trees

by L. C. Barnard

DURING the past year the new system of bracing fruit trees by means of wire, a central ring and screw eyes or staples, has taken hold with the growers throughout the orchards of California with amazing impetus and is rapidly gaining favor throughout the country, in fact, the writer was asked for an article on tree wiring by a South African syndicate of Johannesburg, Africa, for the benefit of the growers in that section. Inquiries are continually coming for more information on tree wiring. Growers have written from New York, Ohio, Georgia, Washington, Oregon and Indiana, expressing their interest and asking for additional information, indicating that tree wiring of fruit trees is of significant importance to the fruit growing regions of the United States.

This method of bracing trees goes hand in hand with the "so-called system of long pruning." "Long pruning" has conclusively proved to have increased the yields of fruit trees throughout the state, and as the grower used wooden props or some form of bracing before "long pruning" was introduced, it is of equal importance and a necessity that the orchardist must brace his trees with even greater care to handle the increased yield without serious breakage. Accordingly, during the past season growers have found the central wire brace a boon in that larger fruit crops can be matured safely on the tree without breakage than has been the case in the past where wooden props have been used.

Wire Bracing Cheaper Than Props.

An orchardist is a very busy individual about the time his fruit has attained sufficient size to cause the limbs to require props, hence if he has already installed the central wire brace after he finished his pruning in the winter, the hauling out and placing of props is eliminated. Not only a saving in time and labor is accomplished but the actual cost of the material to wire brace a tree is considerably cheaper than would be the cost of a sufficient number of wooden props to support the crop on the same tree. The writer, while giving tree wiring demonstrations in Sutter County on January 5 and 6, 1923, came in contact with a grower in that district whose cost for wiring full bearing peach trees, including labor and cost of equipment, amounted to only 16½ cents per tree. When one stops to consider that props cost from 10 to 20 cents apiece, that an average of eight props per tree is generally necessary and that after the wiring has been installed it is good for 15 to 20 years or longer, the above figure represents a big saving to the grower over a period of years.

Then, too, wire braced trees are secure, whereas wooden props are often dislodged by winds or sink into the mud during an irrigation, causing considerable breakage. Wooden props are also a nuisance to the orchardist when he wishes to establish furrows for the final irrigation preceding harvest. Also depreciation of crops is very high as compared to wire bracing.

Trees that are wire braced are more resistant to breakage, winds, etc., than trees which are supported by props.

Tests Made to Determine Strength of Materials Used in Wire Bracing.

During the summer of 1922, the writer, in co-operation with the agriculture engineering division of the college of agriculture, made a few tests on the strength of some of the materials used in wire bracing, the result of which may be of additional value to the orchardist.

It was found that it took 130 lbs. of force to pull a small chicken wire staple out of a 2-in. walnut limb after the staple had been driven down as far as is the custom when bracing fruit trees.

The 1½ in. barbed wire staple required 450 lbs. of force to extract it. The 2-in. staple required 605 lbs. of force to pull it out.

The No. 207 screw eye gave way at 400 lbs. of pulling. In this case the screw eye was not pulled out of the wood, but the eye was opened out straight.

The eye of the No. 209 screw eye gave out at 230 lbs. of pull.

It was the intention to conduct the same tests on each variety of tree, i. e., apple, pear, peach, prune, etc., but owing to lack of time the tests were carried out only on walnut. However, the above figures serve as an indication as to the enormous load of fruit the wire bracing system can safely carry. The breaking point or tensile strength for several sizes of galvanized wire is as follows:

No. 0, 4965 lbs.; No. 1, 3867 lbs.; No. 2, 3465 lbs.; No. 3, 2880 lbs.; No. 4, 2433 lbs.; No. 5, 2079 lbs.; No. 6, 1770 lbs.; No. 7, 1389 lbs.; No. 9, 992 lbs.; No. 10, 774 lbs.; No. 11, 618 lbs.; No. 12, 510 lbs.; No. 13, 327 lbs.; No. 14, 297 lbs.; No. 15, 222 lbs.; No. 16, 183 lbs.

It is said that when the wire is bent around something, the above figures are reduced about 50 per cent. However, this did not prove to be the case in the above tests, in fact, in several cases it took approximately 400 lbs. of pull to break No. 14 wire after it had been attached to the screw eye. However, this may be explained by the fact that the tabulated figures above are averages and the piece of wire used in the above tests was probably extra good material.

Considering that the average yield in the state for apricots is about six tons per acre, and about the same for peaches, etc., and that in an orchard which is planted 20 by 20, there would be 108 trees to the acre, then six tons, or 12,000 lbs., divided by 108, gives about 111 lbs., or an average of about two to three 50-lb. lug boxes per tree. Assuming a tree is wire braced with No. 14 wire and No. 209 screw eyes, and knowing from the tests, as outlined above, that it took 230 lbs. to open the eye of the No. 209 screw eye, and using 50 per cent of the tensile strength for No. 14 wire, would make the breaking point of the system 148 lbs. However, the 148 lbs. represents the amount of weight it would take to break the weakest part of the system. Assuming that in the wire braced tree of the above example eight main limbs are braced, then it would take approximately eight times 148 lbs., or 1184 lbs., of weight to break the system, which is far in excess of the amount of fruit borne by an average full bearing tree even in California.

In the above tests it was impossible to break the washer. The harness ring broke after 610 lbs. of pull had been applied. However, the ring was elongated, having only two wires attached, whereas had eight wires been attached, pulling equally in all directions, this elongation of the ring would not have occurred, hence the number of pounds to break it would have been considerably higher.

The central wire brace is not fool

(Concluded on page 42)

A Fruit Grower's Paradise

by Earle W. Gage

THE HAWAIIAN Islands have rightly been termed the Fruit Grower's Paradise. These historic dots on the bosom of the mighty majestic Pacific are making a contribution to the world's food larder which cannot be estimated alone in the millions of dollars represented in the total annual production and exportation. The fruits of the island group have come to be recognized in the marts of trade and on the consumer's table as an indispensable contribution toward feeding the world. American people by the million are made happy, their table made tropical, because pineapples by the billions are canned or shipped fresh from Honolulu. Even distant Europe and Asia depend upon these islands for this luscious fruit, and few indeed are the cities of the world today without Hawaiian pineapples at one season or another. Pineapples have drawn the attention of the world toward Hawaii, and the enormous sale of this fruit has created a fruit industry among the native and American population of the islands, which compares well with any fruit industry of the modern world.

When Pineapples Became Known.

When pineapples were first grown in Hawaii, no one knows. Certain it is that this unique fruit was thriving when Captain James Cook, the English sea captain, discovered the islands on that eventful voyage back in 1778. But the crop was not placed on a commercial scale, with a world-wide distribution as the goal, until after the American occupation, about 20 years ago. Within the remembrance of millions they have consumed their fresh pineapple, grown to a lusciousness unequalled save for Hawaii, since 1898. Only within the past decade have millions of American money been linked with characteristic American genius, in making world distribution of the fruit a possibility, indeed, one that may be described as being most profitable.

It takes 18 months to produce the pineapple crop, intensive cultivation being followed.

The pineapple is supposed to be a native of Brazil, whence it passed to other parts of tropical America, including the West Indies, and, more recently, to sections of Asia and Africa. It became known to Europeans about the middle of the sixteenth century. We hear of it in England a century later, some having been sent as a present to Cromwell, and in 1661 it was served at a banquet given by Charles II. In 1718, the cultivation of pineapples was first successfully established in England, in the garden of Sir M. Decker, of Richmond, Surrey. The plants were grown in pits heated with bark and watered with tepid water.

The Pineapple in Hawaii.

The development of the pineapple industry is one of the most remarkable in the history of the Hawaiian Islands. In 1906 the value of the canned product shipped to the mainland of the United States from the islands was $350,000. This has grown in 12 years to a value of more than

(Continued on page 14)

Pruning Grapes on Farms

by L. H. Cobb

BECAUSE they imagine that pruning grapes is an exact science that only an expert should attempt, many farmers do not do any pruning at all and their grape rows run riot. Pruning is not complex and depends on a few very definite principles which any farmer can learn easily. Why let your vines become a tangle and produce small and inferior flavored fruit when you can just as well make them produce the best and keep in bounds?

February Best Month to Do Pruning.

February is the best month for pruning. It must be done before the sap flows for the vines will bleed and weaken if left too late. Then pruning before the rush of work gives more time to do it as it should be done. It can be done earlier than February, but it is not wise to put it off later. December is as early as it should be done, as the vines need to be perfectly dormant.

Before you begin, have in mind just what your future vine will look like and be sure you understand the few underlying principles. All fruit is borne on new wood each year, which grows from buds on growth of the previous summer. Dormant pruning makes for stronger growth and summer pruning, if foliage is removed, weakens the vine in proportion to the removal of foliage. Reducing the number of bunches that set will improve their quality, and the number can be regulated by the pruning.

Pruning the Young Vine.

To prune a young vine, select the two strongest canes that grow from near the ground, provided they are long enough to reach to the top wire of your trellis. Two wires is the ordinary farm method of making the grape trellis, and the posts must be strong and the end posts well braced. If the vine is not strong enough yet, cut the strongest cane back to a few eyes close to the base and it will make a strong growth and furnish the needed canes for next season. Tie one of these canes to the upper wire, cutting it off just above where tied. Tie the other to the lower wire and cut it off there also. The reason why two canes are chosen is that it is easier to keep your vine balanced, as branches from any cane will grow stronger near the highest point, and with these two canes the highest point in each is just where we want the side canes, while if we used one cane the branches for the lower wire would be weaker than those for the upper wire.

Summer Pruning.

Now comes our chance to encourage strong canes of the two we want on each wire by summer pruning, but we must not remove any foliage in doing it. If we watch and rub off all the side branches from the old canes except the two that start strongest and nearest the top, we will send all the strength of our vine into the four branches—two from each cane. We must not rub off any side shoots from these branches though, for they will be the foundation for our fruit spurs for next year.

Now we have the framework of our grapevine grown and it remains in service until we want to renew it, and I have known such vines to bear from the same side canes for years. The next spring you cut off the branches along the wire where they come together from each way. Then you cut back every side branch from them to three buds. From these buds you will have new growths start, and it is on these that the bunches of grapes will set. New wood is produced for next year's fruiting spurs to grow from. After the fruit is set you may make it better by pinching the tips from each bearing shoot a short distance beyond the bunches, but do it early and do not cut off much foliage or it will check growth somewhat.

Very few farmers attempt this summer pruning, but it does make the fruit larger as it throws more strength into the bunches. It is best to leave only a dozen bunches of fruit to each side branch, which makes four dozen in all, but many leave double as many where the vine is very strong.

Cut Back New Growths.

Every year after this you cut back all the new growths of the previous summer to three eyes and remove any excess entirely, keeping only enough to furnish the number of bunches you desire, counting four to six bunches to each stub.

If you have an old vineyard or vine that has run riot, you must not try to prune it in shape in one year. Cutting away so much wood when it is dormant will encourage rank new growth and no fruit. Cut back a part each year until you have it reduced to the bearing canes that you desire and you will get some fruit each season and will make your vine better. Picking off fruit where too much sets will help you to get better quality, and judicious pinching out of buds and tips of branches in summer will help to direct growth as you desire it and to get the vine reduced to the form you want.

Lightning Injury to Grapevines

by Arthur S. Rhoads

LIGHTNING strokes, when occurring in vineyards, commonly result in a very sudden dying of the vines, the cause of which often remains a mystery to the grower. In case the lightning strikes a trellis wire it may be conducted along the wire for several rods before the discharge becomes grounded, and frequently it may run the whole length of the trellis. The discharge, which is communicated to all the living parts of the vines in contact with the wire or wires over which it travels, is greatly favored if the vines have first become drenched with rain. If struck early in the growing season the young shoots and their leaves suddenly wither and die, the effect being quite striking within a few days after the occurrence of the lightning stroke.

Where the main stem or arms of an affected vine remain uninjured it may put forth new shoots so that the vine soon appears as vigorous as ever. In other cases, however, the injury is by no means confined to the shoots that wither a few days after the stroke, but the vines or parts of vines that are not killed outright often continue to die during the next year or two. In such cases the roots probably were injured, for it seems likely that this may result from the conduction of the discharge through the soil, if it was moist at the time of the stroke. With the lapse of a year or so the extent of the injury to the vines becomes fully evident. Some die entirely, others die only to the ground and later send up basal shoots, while others may have two or three arms still alive. Upon the latter there is but a weak production of both foliage and fruit and whatever fruit is produced is subject to sun-scald as a result of the insufficient protection afforded by the scanty leaf canopy. As a result of their greatly weakened vitality, the vines not killed outright are especially susceptible to attacks by various parasitic fungi.

Remedial Measures.

Vines in which even the roots are killed should be dug up and replaced by others; those that are partially killed usually send up basal shoots which should be trained up to replace the old bearing vine, the latter being cut back if dead, or as soon as it becomes unprofitable.

As a preventive measure, the use of metal posts instead of wooden posts for the trellis should serve to ground the discharge before it can travel any appreciable distance along the trellis wires.

RALPH P. MERRITT, managing director of the Sun-Maid Raisin Growers for the past eight months, has been elected by the board of directors as president of that association.

American Pomological Society

ON NOVEMBER 6 to 9, 1923, at the meeting of the American Pomological Society, held in New York City, Paul C. Stark of Louisiana, Mo., was elected President. Mr. Stark received his horticultural training at Cornell University and later developed a personal orchard of 15,000 trees. He is Treasurer of the Stark Nurseries and is Associate Editor of The American Fruit Grower Magazine, the national fruit paper. Dr. J. C. Blair of Urbana, Ill., was elected Vice-President. Dr. Blair is head of the Horticultural Department of the University of Illinois and has developed one of the strongest and best equipped horticultural colleges in America. W. T. Macoun, Dominion Horticulturist of Canada, was re-elected Vice-President from Canada. Prof. Macoun has charge of the horticultural work throughout Canada. H. C. C. Miles, Milford, Conn., who was elected Secretary-Treasurer, is an orchardist and also Secretary of the Connecticut Pomological Society.

The members of the Executive Committee of the Society, representing leading fruit sections of the country, are all owners or operators of orchards and are recognized leaders in fruit growing in their own states. Following is a list of the Executive Committee members: F. Cranefield, Madison, Wis.; M. L. Dean, Boise, Idaho; W. L. Howard, Davis, Calif.; C. I. Lewis, Chicago, Ill.; James Nicol, South Haven, Mich.; W. S. Perrine, Centralia, Ill.; H. D. Simpson, Vincennes, Ind.; F. C. Sears, Amherst, Mass.; C. S. Wilson, Hall, N. Y.; C. D. Matthews, West Raleigh, N. C.; R. B. Cruickshank, Columbus, Ohio.

The American Pomological Society is the highest authority in the fruit world because this Society is unquestionably "the Supreme Court of Horticulture." It is also the Mother association of all the various State Horticultural Societies and is the "clearing house" for all up-to-date fruit-growing information.

The Presidency has been held in the years since the organization of this Society in 1848 by men whose names and records in the horticultural field are as prominent as that of Edison and Steinmetz in the electrical experimental field. In 1919 at the St. Louis Convention, the famous Liberty Hyde Bailey, Dean of Cornell College of Agriculture, Ithaca, N. Y., and the leading author and authority on horticultural subjects, was made President, and held that position until his retirement in 1923.

The first President of this organization was Marshall P. Wilder, whose name has gone down in history as one of the greatest men that the world of pomology has ever known. In the 75 years from the founding of the Society in 1848, the American Pomological Society has had but seven presidents. Marshall P. Wilder served for 35 years, leading the society with grace and dignity, and brought to his aid the best pomological talent in the country. In his will, he left a sum "for the general purposes of the Society," and another fund for the Wilder Medals to bestow upon fruit of special merit. The winning of this medal has become the most coveted honor in the Fruit World.

The service rendered by this society to fruit growers and the fruit-loving public of North America is well nigh incalculable. For 75 years, this body of scientific and practical horticulturists has labored continuously for the betterment of horticulture in general—the successful introduction of new and better fruits and the improvement of fruit growing practices throughout the nation. Paralleling the history and the growth of this organization, in every fruit section of the country, is the increase in incomes enjoyed by fruit growers throughout the country. But for the activities of this organization and kindred societies affiliated with it, it is doubtful that the average fruit grower throughout the country would have been able to advance to

such a great degree in improved fruit growing methods.

This Society is the "clearing house" for all the problems and the solutions of those problems that have been met by all the various state horticultural societies throughout the country. It might be called the central body of all the great horticultural interests of the nation. Without this clearing house, the state societies would be working independently and many times at cross purposes. The successful work of one group in one state would be unknown to persons facing the same problems in other states. There would be a great duplication of experimental work and much money and time would be lost, if it were not for the fact that to this central body comes all the problems and all the reports of successful experiments from all the state bodies and from it again goes forth that information to all state horticultural societies through the length and breadth of the country.

Through affiliation and co-operation with all the state horticultural societies of the United States, members of the state societies have the benefit of reduced dues in the American Pomological Society, the national association, and in this way keep in touch with the changing conditions and methods of fruit growing, not only in their own state but throughout America.

The importance of this work can only be realized when one considers that the fruit crop of America amounts to many millions of dollars every year.

Winter Injury to Pecans

DURING the present summer many reports have come to the Georgia Experiment Station that numbers of young pecan trees were dying. In most cases the trees started into growth and appeared perfectly normal for a time, then the leaves turned yellow, growth ceased, and the tree died to the surface of the soil.

If examined when the leaves first began to show the unhealthy color, the sap-wood near the base of the tree was found to be dead and dark colored. The sap-wood in this region soon develops a peculiar odor which has suggested the name, "Sour Sap," by which the disease is generally known among growers. The bark over this region soon dies and, if the injury extends entirely around the tree, the underlying tissues dry out and fail to transport water and plant food to the upper part of the tree.

Injured trees are often attacked by bark beetles that bore small holes into the bark and sap-wood. Growers often attribute the death of trees to the work of this insect. The bark beetle only attacks trees that are already in a dying condition.

The injury is in some way produced by cold. It is generally thought the sun shining on the trunk while the tree is frozen causes injury to the tender cambium tissue between the bark and the wood. Such injury occurs frequently to peach and pecan trees in this state. In pecans it is usually found only in young trees, before the sixth year. After this time the bark becomes thicker and more corky, and seems to protect the trunk from injury.

Many growers now practice wrapping the trunks of young trees with sacks, grass, or other protecting materials and have succeeded in saving the trees.

After a tree is once injured there is little hope of saving it. The best thing to do is cut the tree off near the surface of the soil. The stump will soon send up new sprouts. Remove all but one so that this one will get all the nourishment possible, and it will be large enough to bud the following summer. The old root system will push the bud into bearing 2 or 3 years earlier than a bud on a young seedling.

B. B. HIGGINS,
Botanist.

A Fruit Grower's Paradise

(*Continued from page* 10)

$7,000,000 for the pack of 3,000,000 cases.

In planting pineapples the land is first plowed two or three times, harrowed and disked until the soil is in perfect tilth, when the fields are laid out in blocks 200 to 300 ft. wide, with a wagon road and drain ditch around each block. These blocks of land are then furrowed with small plows. Some planters make rows 4 ft. apart and set plants 2 ft. apart in the row. Other planters make rows further apart and set plants 12 to 16 in. apart in the row. By this latter method there is always room to run a horse cultivator without injuring the plants, and about the same number of plants —5000—can be set to the acre in either case.

For 18 months after planting, the only attention the pineapple plant requires is frequent hoeing and cultivating to keep the land free from weeds and the soil loose and moist. The lands devoted to pineapple culture in the Hawaiian Islands have an annual rainfall of from 50 to 80 in., well distributed throughout the year.

The pineapple harvest opens the latter part of June and ends about the first of October, though the bulk of the crop ripens in July and August. A few pineapples for table purposes may be found any month of the year. There are about 30,000 acres of land used in the cultivation of pineapples in the Hawaiian Islands, more than 20,000 acres of which are on the Island of Oahu. As there is never any frost in the Hawaiian Islands and no serious insect pests, the crop is a very sure one.

How the Fruit Is Packed.

The fruit is received at the canneries the same day it is picked, having been left on the plant until fully ripe, since the pineapple receives its sweetness from starch in the stock of the plant, which is converted to sugar and drawn into the fruit during the last days of ripening. The operation of canning is simple, quick and sanitary. The crown of the fruit is cut off in the field, and when the fruit arrives at the cannery it passes into a machine which first cuts off both ends, then takes out the core and removes the rind, leaving the pineapple in a perfect cylinder, slightly smaller in diameter than the tin in which it is to be packed. The fruit is then conveyed to a slicing machine, which slices the whole pineapple at one operation, making every slice the same thickness. From the slicer the fruit passes on to a moving belt, which carries it past a line of packers who select the perfect slices for the first grade. Slices which are not perfect go into the second grade, and the broken slices are made into grated pineapple for the confectionery trade.

From the packing table the tins are conveyed to syrup machines where a syrup of clear water and granulated cane sugar is put over the fruit, thence to the exhaust box and double seamer. After the cover is on the tin, the fruit is given a cook, varying from 15 to 30 minutes.

Today there are some dozen large pineapple canning factories in the Hawaiian Islands, whereas the first was established only in 1900. In 1901 but 2000 cases were packed, and it is expected that the 1918 pack will reach nearly 4,000,000 cases, so great has the world demand become for this fruit. Up until 1913, the United States alone absorbed the canned product; since then it has been necessary to divert shipments to other countries, and the eagerness with which European peoples have ordered pineapple testifies to its universally attractive flavor.

Other Tropical Fruits.

Many tropical fruits, hitherto unknown or neglected outside of their native countries, are now receiving attention, not only in the markets of the temperate zone, but among growers in the tropics and also in subtropical regions, where some of the more hardy of these fruits are being acclimatized. Within a generation, the banana has passed from a rare luxury to a staple food product, the pineapple from a little known fruit used for flavoring to a highly prized article of food. These two fruits are but the pioneers, and others are following close after them to popularity. The grapefruit has already established itself. The avocado, the most conspicuous aspirant for popular favor at the present writing, has overcome much skepticism and now appears in varieties that can be grown just outside the tropics, hundreds of acres being under cultivation in Florida and California. As soon as the horticultural experts have conquered the Mediterranean fruit fly, this fruit is certain to take on large commercial importance in the Hawaiian Islands, to the soil and climate of which it is well adapted.

Hawaii has recently adopted the famous Chinese litchi, a fruit for centuries past popular and universal in China. This unique product is certain to become as world-wide in its appeal to popular consumption as has the pineapple, and the possibilities of its culture are even greater. Its popularity and introduction have been limited only by production thus far, but arrangements are under way with a view to increased production along commercial lines.

The Litchi Nut.

To the people who have lived upon the shores of the Pacific the litchi "nut" is a more or less familiar article of food, especially at the seasons of the Chinese New Year. Few of those who dwell east of the Philippine Islands, however, have seen the fresh fruits which, when dried, form the litchi nuts of commerce. In most varieties the ripe fruit has an outer shell-like covering of brilliant red, giving a dish of them a striking resemblance to large strawberries. The flesh within this tough outer-covering is white with about the consistence of a Muscat grape. Its delicious flavor makes the litchi highly prized by those who are familiar with it.

In Honolulu the limited crop is readily retailed at prices ranging from 50 to 70 cents per pound. Borne in clusters on medium-sized trees, with dark green foliage, these fruits usually mature about May or June in Hawaii. Like the banana and pineapple, the litchi is practically immune to the attacks of the Mediterranean fruit fly, and as it stands shipment well, it is peculiarly adapted to growth along commercial lines.

Mr. Ching Shai, of Honolulu, is authority for the statement that the first litchi tree was brought to Hawaii about the year 1873 by Mr. Ching Check. The tree was planted on the plantation of C. Afong, and is today the best known of the litchi trees of the islands. Usually it has borne fruit abundantly, and the crop of this single tree is said to have sold at prices ranging from $75 upward in ordinary years, so rare and so highly prized is the fruit.

Requirements of the Litchi.

The litchi belongs to that family of trees adapted to tropical or near-tropical climatic conditions. When the tree is young it is very sensitive to frost, but when mature it will

withstand considerable frost without injury. A deep, moist, alluvial soil is best adapted to the needs of the litchi, yet it prospers in a rather heavy and compact soil.

Much is yet to be learned regarding the cultural requirements of the tree. No orchard experiments with the litchi have been completed by the Hawaiian Agricultural Experiment Stations of the United States Department of Agriculture.

The States Relations Service have under consideration at present several important experiments. It is known that unless there is a liberal rainfall or a constant subterranean supply of water, abundant irrigation is necessary. It is well known, also, that large quantities of fertilizer must be used in successful cultivation. It is the custom of some of the Chinese growers to supply night soil several times during the year. For this purpose a shallow trench, dug near the ends of the roots of the tree, is filled with the fertilizer which is covered with soil. Duck manure also is a favorite fertilizer with the Oriental growers.

Considerable difference of opinion exists regarding the value of pruning. The customary manner of harvesting the fruit by breaking the branches off 10 to 12 in., proves a form of pruning which some growers insist is necessary for continued productivity of the tree, but here also there is no accurate knowledge.

The litchi trees are planted at least 30 ft. apart, and under good conditions they will require even more space before reaching maturity. Since it is important that the plantings be protected from heavy winds at all times, especially during the flowering season, a sheltered spot must be selected for the orchard, or windbreaks provided. The litchi may be preserved, dried or canned and in any of the three forms presents an attractive fruit for which there exists a ready and high-priced market.

New Fruits Needed

THE ONLY way in which fruit growing can make any permanent progress is through the development of new varieties of fruit which are superior to existing sorts, according to a recent statement on the subject by Dr. U. P. Hedrick, Horticulturist, at the New York State Agricultural Experiment Station at Geneva. Dr. Hedrick, author of a number of fruit books and an authority on fruit growing, has himself originated several new varieties, both of tree fruits and small fruits, which have now taken their place as accepted commercial sorts due to their superiority over kinds already grown.

"Bringing forth new fruits is the most profitable work in fruit growing," says Dr. Hedrick. "The most conspicuous landmarks in the progress of fruit growing for any period in the past has been new fruits. This is so now and will be so in time to come. Fruit breeding is still pioneer work for, despite the fact that fruit growing is an ancient art, most of our cultivated fruits are but little removed from the wild types. There is no perfect fruit and every variety of every fruit is known by its faults. Nearly all varieties of fruit have originated by chance, but now plant breeders have worked out many of the laws and principles which govern their art and progress ought to be rapid.

Present Sorts Were Once New.

"Fruit growers often dismiss new fruits with the statement that they do not pay. If fruit growers had done this a generation ago we should have almost none of the small fruits we now grow; and if 100 years ago fruit growers had refused to try new fruits, we should have had almost none of the tree fruits found in modern orchards. Even though the purchase of a new fruit is a speculation, the fruit grower should try his luck to see if the new varieties may not push forward fruit growing in one direction or another."

That Association of Yours

by Tim and John

Returins and Paymints

ON THIM cars ye be after sellin' f. o. b., are yez sure iv gettin' yer money?" "Yes. They was showin' me up to the Central how they do it. Supposin' John Smith in Atlanta, Ga., buys a car of apples f. o. b. at $800.00. We tell the railroad agent to bill the car to ourselves (the Central) and advise John Smith when it gets to Atlanta."

"And its understandin' I am that John Smith ain't put down wan cint yet. Phwat's to privint his unloadin' the car whin it gits there and be payin' a divil a cint for it?"

"The railroad. Mind you, we bill that car to ourselves. That means we own the car; we simply entrust it to the railroad and they give us a receipt —a bill of lading. If they let anyone have it without that receipt or a written notice from us, the railroad's got to pay."

"In hivins' name, how will this Smith man be gettin' the car? And how will yez be gettin' the money? He's there, wan thousand miles from here; ye're car's there and the railroad can't be givin' it to annywan but yersilf and ye're here," said Tim, beginning to be confused.

"Wait a minute, Tim. The Central makes a written notice to the railroad agent in Atlanta to deliver that car to John Smith. But it sends that notice to a bank in Atlanta along with a draft. Smith has to pay the draft before the bank will give him that notice. Then he gives the notice to the railroad and gets his car. The bank sends the money to the Central."

"But will he be payin' for the car without seein' it? Like buyin' a pig in a poke? He can't even get a look at phwat ye've put in the car, can he?"

"Yes, we put right on the bill of lading, 'Allow Inspection'—that's only fair to him. But he can't get that car without first goin' to the bank payin' for it and gettin' his order on the railroad."

"That's all roight, but supposin' after lookin', he be after claimin' the car's not roight. Me understandin' of it is thin yer governmint inspectin' it, but phwere's the money comin' in?"

"That depends on what the inspector finds. If we're wrong, the Central telegraphs the bank to reduce that draft by whatever amount they agree to allow."

"Grantin' yer car's all roight, John, but sad is the buyer's feelin's and prospicts from droppin' markets and he's refusin' to be payin' for it? Phwat thin?"

"You're pressin' me close, Tim, but I asked them same questions up to the Central and I'm ready for you. We sell the car to someone else. If it's at a loss, then we sue the buyer for the difference."

"Yer cost iv collectin', payin' lawyers and the loikes will be aten up phwat ye'd be gettin'—sure ye'll nivir be sooin', it's him knows it."

"Yes we do; the Central's got a couple of just such cases now. But it ain't no manner of good for us to beat sich a feller. He can turn around and do it to some other shipper. That's another hope of the Federated. If they're handlin' all the co-operative tonnage (the best produce that comes into the market) such a feller will think twice before he does it. Maybe he wouldn't be able to buy no more of that best tonnage. Then, too, even if he does try it, he knows the Federated is big enough to press suit every time."

"Faith ye'd be makin' bad bizness iv it—scarin' buyers to avoidin' ye beloikes the divil's avoidin' holy water."

"No they wouldn't, Tim. There ain't many buyers that go that far, but what there is, it's a big problem for the square buyers. Supposin' you and me were buyers in Atlanta. We each buy a car of 'Cataract' apples. When they get in the fruit's all right but the market's down. You bein' a square buyer accept your car and take your loss. I, bein' crooked, reject my car. If I get an allowance, I can undersell you and still make a profit. You've lost money and perhaps your trade too. Or, if the Central sells that car for my account, but don't go through with the suit, even then, you've lost and I haven't. If that keeps up, I'll soon run you out of business. That's why the best buyers like the Federated idea; they look to see it control the regular rejector."

"Uh-huh," said Tim, for he was thinking.

It's not to me loikin', John, for the Fidirated to be havin' all iv the money for the shtuff they'll be handlin' through its headquarters, wherivir that is. 'Tis danger there's in it."

"But there won't be any money from these f. o. b. sales goin' through no head office. Our Central sends their own drafts to the bank in the market where each car is sold. That bank makes the collection and sends their check back direct to our Central. It's just like that with sellin' too. Our sales manager will be quotin' and confirmin' and dealin' direct with all them salesmen. The sales manager for the watermelons will be doin' the same from Georgia. Don't make any difference how many co-operatives is using the sales system each one will be workin' independent of the other but all usin' the same salesmen, mostly at different times in the year. Ain't no national centralization of sales, nor of money."

"Whin money's arroivin' in the hands iv yer cintral, phwat's privintin' thim dippin' into it and the loikes iv yez bein' none the woiser."

"No, the directors see that a proper set of books is kept, and the State Dept. of Farms and Markets checks up the directors to see it's bein' done. Then certified public accountants check up the books. If there's been any crooked work they'll find it. They know how. They've got to know how or the state won't certify 'em."

"Sure and can't some spalpeen at Central be skippin' out with the money bechune toimes?"

"Yes, I suppose they could. But I don't like all this suspicion, Tim. We've got to have faith in those who we trust with our money, just like we do with our bank, our tax collectors, and the fellers that take up collections in church. Most people are honest, just like you and me. But just to make doubly sure every person in that Central that has anything to do with the money, directors and all is bonded for more'n he could ever get a hold of by stealin'."

'Tis proticted foine yer money matters are, to all appearin', but I'm thinkin' it's over proticted they be. It's rumblins iv complainins' I'm hearin' regarding yer mimbers not gittin' money from Cintral 'til Spring and the slow paymints iv it."

"Perhaps you are. Maybe the growers who were used to sellin' in the fall don't understand it. Those who were accustomed to storin' ain't complainin' so much. The main reason for delays in payin' is the steady equal shippin' idea."

"That's to me loikin', cuttin' out speculatin' and the loikes. How did yez be comin' by that?"

"Just this way. First year the Central was organized, each Local was sellin' its fruit through a different salesman, and they was all usin' the same brand. One year woke them up to the fact that each Local was competin' with all the rest. Also the brand wasn't gettin' no distribution. But what was worse they wasn't treatin' their buyers square. One Association would sell to an f. o. b. buyer and when the car got in, there'd be another car of the same stuff on the same market from another local, but it was there on consignment. The second car would sell for less, the

(*Continued on page* 22)

California Fruit Growers' Conference

THE DECIDUOUS fruit growers of California held a five-day conference, from November 19 to 23, at Berkeley, Calif. This conference is becoming an annual event and is becoming one of the most interesting meetings in the entire Pacific Coast. Much interest was shown in Marketing Day, when the general managers of the large California co-operatives were present and gave their ideas concerning marketing.

C. C. Thorpe, manager of the California Walnut Growers' Ass'n, emphasized the importance of not having a carry over any year, that it was bound to often disturb the market for several years. The largest carry over that the California Walnut Growers' Ass'n ever had was 2 per cent. He believed that in naming prices for walnuts or other California commodities various factors would have to be taken into account, such as the trend of all food prices; the domestic and foreign competition; size and quality of the crop; the situation on directly competitive lines; time of crop harvest; and how the previous crop moved, that is, whether the trade lost or made money. One should also take into consideration the consumer and what he can reasonably pay. He favored comparatively low opening prices and a gradual strengthening so as to create an advancing market.

Ralph P. Merritt, president of the Sun-Maid Raisin Growers, stated that the association now had a working capital of $9,000,000 and controlled 90 per cent of the crop. He stated that competition in raisins was very keen in Europe and was growing in Australia and South Africa. Commercial bakeries were found to be the best output, using last year 50,000 tons. He believed it good business to supply independent packers with some raisins as packers have always been able to get raisins from association members and others.

A. M. Mortensen, general manager of the California Prune & Apricot Growers' Ass'n, stated that this past year at least 25 per cent of the apricots were not picked, that the carry over in 1922 was 5½ million pounds, due largely to too high prices. Deliveries in 1923 amounted to some 26,000,000 lbs. It is now apparent that the California prune crop would be about 175,000,000 lbs. There was a carry over of 40,000,000 lbs. on June 1, which has since been reduced to 3 per cent of the crop and consists largely of small sizes. He reported that about one-fourth to one-third of this year's crop is already sold. He did not believe in selling to independent packers but believed in moving the crop through brokers.

J. A. Teagarden, president of the Auburn Fruit Exchange, believed that the California fresh fruit shippers must give much more attention to size, color, maturity and flavor of the fruit. He believed the state's reputation was now being injured by shipping much green and immature fruit.

From figures given at the meeting by Clyde Seavey, president of the State Railroad Commission, it was shown that California in 1922 shipped 113,659 cars of fresh fruit, while this year, up to November 1, 161,399 cars had been shipped, or an increase of 42 per cent.

Preston McKinney, secretary of the Canners' League of California, showed that the increase in canned goods packed since 1912 had been 400 per cent, with a population increase of only 10 per cent. Only 20 per cent was exported. In 1922 the California pack was 15,000,000 cases; Oregon and Washington, 3,000,000; and Hawaii, 6,000,000.

Dr. E. S. Moulton, of the Canning Peach Growers, stated that the acreage of cling stone peaches in California in 1922 was 30,000 bearing and 30,000 non-bearing. In 1922, 7,844,000 cases were canned, while by 1927, it will take 14,000,000 cases to hold the crop.

Frank T. Swett, president of the that his organization now had 1400 members and controlled over 50,000 tons of pears. He reported that $50,000 were spent this year in advertising and that 15,000 retail stores were furnished with displays. In cities where advertising was done, business increased 119 per cent in three years.

Fruit Growing and Dairying

by George A. Olson

SOME very fine berries are produced in the Puyallup Valley of Western Washington, in fact, this section is recognized today as one of the greatest raspberry and blackberry sections in America. Few berries of other kinds are produced. A very large percentage of the tonnage now comes east, to be eaten in the fresh state in such cities as Chicago, express trains bringing through cars of berries in fine condition in about 80 hours. A considerable portion of the tonnage, however, is manufactured into such products as canned fruits, jams, jellies and juices.

Many of the farms in the Puyallup Valley are very small, from five to ten acres in extent. On such farms poultry raising makes a very successful combination with berry growing, and on some of the larger farms, especially near the edge of the berry district—farms which have some land for either pasturage or the production of hay and forage crops—dairying with fruit farming appears to be a good combination. On these farms the buildings are generally very modern, having good floors, gutters and mangers, usually built of cement. Separate rooms are provided for washing and milking cows in the certified milk plants and everything within the stables is immaculate. The liquid manure is collected in large underground cement reservoirs. The solid manure is collected in sheltered cement pits or hauled directly to the fields. Usually it is applied to the fields set aside for the growing of cereal and root crops. The liquid is usually applied to land in small fruits.

Dairying fits in nicely with fruit raising. The farmers who have depended on cities for supplies of manure appreciate this as much as anyone because the auto trucks are rapidly taking the places of horse power in the cities. Such quantities of manure as are procurable command fairly high prices. Some fruit growers believe the prices are too high in comparison with returns secured and have, as a result, put into practice green manuring methods. Unquestionably the conversion of the green stuff into milk would be more remunerative. At the same time, about 85 per cent of the total fertility in the crop would be recovered in the manure.

The dairy practice should prove more satisfactory than the green manuring system because the feeds purchased would furnish more fertilizer value (in quantity) than is lost in producing milk. This view is based on the assumption that gypsum is sprinkled on the floors, gutters and manure piles to serve as a nitrogen preserver and that the manure is protected from inclement weather. Eventually this procedure will become a general one because it is a practical method of maintaining organic matter and fertility in the soil. The supplementation of the manure with various minerals having fertilizer value is good practice.

Pruning Time

OLD BEARING trees may be pruned soon after their crop is harvested, and pruning can continue throughout the winter except at such times when the wood is frozen. No fruit trees should be pruned when the wood is frozen.

It is well not to put dressings on tree wounds until the flow of sap has stopped and the wounds have dried somewhat.

Inside Story of the Apple

(*Continued from page 3*)

to soils of orchards which are sprayed with sulphur compounds. It is doubtful if it is of value to add sulphur as a fertilizer in most orchards.

Phosphorous has been widely used as an orchard fertilizer, just as has calcium and potassium, and in many cases with disappointing results. A survey of all the careful experimental work that has been carried on by various experiment stations in different parts of the United States shows few instances where either phosphorous, potassium or calcium have markedly benefited the apple orchard. Crops in the orchards, such as legumes or grasses, have been benefited and the soil thus slowly improved. We need a more exact study than has ever yet been made of the exact importance of these substances in orchard fertilization.

The use of nitrogen as a fertilizer has been as widespread in its benefits as has the use of other minerals in their disappointments. By that we do not mean that all orchards have been benefited by the use of nitrogen, but certain orchards in practically all parts of the country have been so improved. It is largely through the use of nitrogen, together with the proper cultural and pruning practices, that it has been possible during the past 10 years to greatly increase the average production in many orchards. In bearing orchards, particularly orchards in grass sod, it may be considered that the addition of nitrogen fertilizer should have a regular place in the orchard management. In many cultivated orchards as well, nitrogen deficiency is a limiting factor in production.

The Nutritive Ratio.

Research work which has been carried on during the past 10 years has revealed the fact that there is a close correlation between the relative amounts of nitrogen and of carbohydrate material available in a fruit tree and the type of growth that occurs in that tree. The ratio of the quantity of carbohydrates to the quantity of nitrogen available, and its importance in determining such things as fruit bud formation, vegetative growth, etc., was first presented by Kraus and Kraybill in 1917. Since that time, these and other research workers have added to our knowledge of this relationship, until today we have a fairly complete knowledge of the nutritive conditions which favor vegetative growth on the one hand or fruit bud formation on the other.

If there is a very small supply of nitrogen entering the plant from the soil—almost none in fact—the plant will make almost no vegetative growth. The foliage will be small and yellow in color. If the supply of nitrogen is sufficiently limited, practically no fruit bud formation will occur. The cells of the plant will be packed with starch, but there is apparently insufficient nitrogen available to allow this carbohydrate material to be used either in building new wood tissue or in building fruit. This very extreme condition of nitrogen starvation probably occurs but rarely, if at all, in orchards.

A second condition would be that in which a much larger amount of nitrogen is available but in which nitrogen is still somewhat insufficient. The leaves will be rather yellow and not very large, and the tree will make only slight growth. This condition favors fruit bud formation and a tree in such condition will usually blossom profusely though the individual blossoms may be weak and fail to set a large crop of fruit. Such a condition of high carbohydrate supply in comparison to the rather low nitrogen supply available favors abundant flowering and only slight vegetative growth. This condition prevails in many orchards and such orchards often give remarkable results from the application of nitrogenous fertilizer.

A third condition of nutrition would be represented by a tree receiving a fairly abundant nitrogen supply. Vegetative growth would be fairly vigorous, spurs would be making sufficient growth so that a large cluster of dark green leaves would form on each. Under these conditions of a relatively large supply of nitrogen in proportion to the amount of carbohydrates manufactured in the leaves, there would be somewhat less of a tendency for fruit buds to form, but such buds as did form would produce stronger, more vigorous blossoms, with much greater probability of setting fruit. Also there would be less tendency to form tremendous numbers of fruit buds one season followed by practically none the season following. Consequently the tendency toward alternate bearing will be less if the nitrogen supply is fairly abundant.

Finally, we should consider the condition when there is a great excess of nitrogen. Under these conditions most of the carbohydrate supply appears to be used up in the formation of new wood. Vegetative growth is very excessive but there is little tendency toward fruit bud formation. This condition may occur in young trees growing in very fertile soil but there is little danger of this extreme condition occurring in orchards if they have once begun to bear safely.

For purposes of illustration, we have considered briefly the effect of the relative amount of nitrogen and carbohydrates when nitrogen is almost entirely lacking; when it is present but not in sufficient quantity; when it is relatively abundant; and when it is in great excess. The first and last conditions rarely occur in commercial orchards, but all variations between marked deficiency and relative abundance do occur. Nitrogen deficiency characterized by yellow leaves, little annual growth, small fruit and a tendency to blossom profusely but to produce rather weak blossoms which are highly susceptible to frost or other unfavorable conditions, is all too common in our commercial orchards. On the other hand, we occasionally also find orchards where nitrogen is available in such great quantities that the fruit is extremely large, poorly colored, and of poor keeping quality. Between these two extremes lies the happy medium of good foliage, fair but not excessive size in fruit, the production of strong, vigorous fruit buds and regular fruiting, which the orchardist desires so much.

Next month we will discuss in more detail the question of fruit bud formation in the apple and how various practices of pruning, cultivation, etc., affect the carbohydrate and nitrogen supply in the tree.

Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

What Makes a Fruit Grower Successful?

I HAVE been asked many times questions which can be condensed to this sentence—"What are the main conditions and methods that result in profitable fruit growing?"

Whole libraries of books have been written to explain this important subject, which covers such a wide range of thought and experience. However, I believe that the following general points cover most of the essentials.

First—Keep up-to-date and fully informed of the improved methods and developments in the production and marketing of fruits. Furnish what the present and near-future generations will want—not what the past generations were willing to accept.

Second—Demand good quality but be willing to pay a fair price for what you need for your orchard from the beginning, when you buy the land, and your trees, and clear through all the orchard operations—machinery, spray material, supplies, etc. Often cheap bargains are very expensive in the end, and this is particularly true in a life-time investment like an orchard.

The second requirement mentioned above is self-explanatory, but the first needs further details. "How to keep informed and up-to-date?" The fact that you are a reader of the American Fruit Grower Magazine, the National Fruit Publication, demonstrates that you appreciate its great value to the fruit grower. Every orchardist will be benefited by reading the American Fruit Grower Magazine. The fruit growing business is a national industry and the sooner the orchardist realizes this and acts accordingly, the surer he will be of regular profits.

Every fruit grower should be a member of his state horticultural society and thus keep in touch with conditions in his own state, but he must not stop there. In a national industry, the profits in each section are directly affected by what is done in the other sections. **The grower must keep posted on conditions and developments throughout the country.** The quickest, simplest and best method of doing this, is to associate yourself with and become a member of the national fruit growers' association—**The American Pomological Society, a** 75-year-old association that is giving a wider and a stronger service to its members year after year. This central body is the clearing house of information for the state associations and horticultural institutions. Thus it can furnish without delay information on the latest improved methods, etc. I have been a member of this society for many years, and I find in planning and operating my orchard that the annual books and monthly news letters, etc., that come to me as a member of the American Pomological Society have furnished me suggestions which greatly improved the efficiency and methods in my orchard—and besides many money-saving suggestions. Compared to the vast amount of latest orchard information furnished to members, the annual dues are very small—only $5 per year—and even this amount is **reduced to members of any state horticultural society.** The Secretary-Treasurer of the American Pomological Society is H. C. C. Miles, Milford, Conn., and I certainly recommend that any fruit grower who is not already a member, should join and get the great benefits that come with membership.

Poultry in Orchards

Do orchards do well in connection with poultry? I have a poultry farm and am thinking of planting a moderate sized orchard to work with the chickens.—S. B. T., New York.

THE COMBINATION of chicken raising and orcharding has been a proven success for many years. The chickens benefit the trees and vice versa. Chickens eat the fallen fruit, insects, etc., and also fertilize the soil. The trees in turn furnish shade and some food for chickens. Both fruit growing and poultry are highly profitable if proper care is used.

Planting Distance for Apples

I am planning to set out an orchard this spring, planting it solidly with apples. What planting distance would you advise, making use of apple tree fillers?—A. S. B., Virginia.

THERE are more orchards planted too closely than too far apart. However, when apples are used for fillers and the right varieties are used, the trees can be set rather close to each other. The ideal distance when fillers are used will range between 36 and 40 ft. for the permanent trees, which will bring the distance down to 18 and 20 ft. when the fillers are used. When the fillers are planted doubly, so that trees are an equal distance in four directions (six directions if hexagonal system is used) then a portion of the fillers may be removed when the trees first become crowded, leaving a portion of fillers to remain a number of years longer. These semi-permanent fillers are usually left in the center of the squares formed by the permanent trees (when square system is used).

Early bearing varieties of apples should be selected for fillers. Such trees will often bear as high as a dozen profitable crops of fruit before it becomes necessary to remove them.

Winter Pruning of Grapes

I have 10 acres of grapes which I want to prune myself if possible. Is there any great danger of injuring the vines if I prune them during the winter instead of in the spring?—A. J. P., Michigan.

THE IDEAL time to prune grapes, as well as most other fruits, is in the early spring after the most severe weather is past. However, it is often necessary for a grower to take care of a large acreage and he must then start pruning in the late fall and during the winter in order to get all of it accomplished. During an ordinary winter, this would probably not result in much injury, but during a very severe winter, some of the pruned canes would likely be killed back somewhat, resulting in a reduced yield for that season.

There should be very little objection, however, to winter pruning of grapes, particularly if delayed until after the first very cold spell has passed, and then the pruning should be done on mild days, if possible.

Controlling Raspberry Anthracnose

I have trouble with gray colored spots on my black raspberry and the fruit doesn't ripen well—sometimes dries up.—C. B. L., Missouri.

THE TROUBLE you describe is anthracnose. This can be controlled by spraying. Recent recommendations which I received from the Illinois Experiment station were as follows: Lime sulphur (1 to 10) sprayed just as the buds are opening and again with the dilute lime sulphur (1 to 50) one week before blossoms open. Formerly Bordeaux mixture (4-5-50) was used and some growers still use it. Old canes should be cut out and burned as soon as picking season is over.

That Association of Yours

(*Continued from page* 16)

f. o. b. buyer would take a loss on his car, get sore and lay off f. o. b. buyin'. So they decided on Central sellin'."

"There's sinse to that. But how's that relatin' to stiddy shipments?"

"Only this, that if they was goin' to sell centrally, who'd have the say about when they'd sell, how much they'd store, etc. Each Local had tried to decide that thing for themselves. Some years they guessed right, some years wrong. They agreed that none of 'em was good enough to guess it right every year. No one could remember a dealer or speculator who'd guessed it right every year. They decided it was no use tryin' to guess. Then they hit on the idea of sellin' steady regardless of what anyone thought the market might be."

"I have it," interrupted Tim, "'Twas poolin' the sellin' they waz and disregardin' the toime they waz sold."

"That's it, of course, we pool according to variety, grade and size. Any man ought to see that they couldn't close a pool till all that variety was sold. Schwartz can't tell till spring how he's comin' out exactly. Our members have gone into the marketin' business; they're in the same boat."

"But man," urged Tim, "yer Cintral sellin' stiddy so the money's comin' in stiddy loikewise—phwat are they doin' with it, admirin' its beauty?"

"No, they're sendin' it out all the time. It's a knotty problem, but we're makin' progress on it. A year ago (the first year of Central sellin') the plan was to send out payments on each variety each week. When they got into it they found they were handlin' 121 different kinds of apples."

"Holy St. Patrick! Is there that manny? Sure and some bookkeepin' it'd be takin' for to be payin' each week on ivery wan of thim koinds."

"Yes, and then it was too late to change the system. They did the best they could, but money piled up in the Central's banks. Even so, they closed all fall fruit pools on December first and all the rest was closed May first, and they didn't overpay a single member. That's more'n most any Local had been able to do before that."

"And how are yez profittin' by lissons iv the year past?"

"They planned to borrow money before pickin' and send each grower 10 cents a bushel and 30 cents a barrel on his crop estimate. Then as fast as money came in they could pay the bank and prevent that pilin' up which came early."

"That's a foine idea. 'Twas with invy I waz hearin' iv it. It's few outside growers that's enjoyin' sich hilp."

"Yes it was all right, but many of the members forgot they'd ever had it when it came to settlin' up for the fall fruit. That's a good big slice of what most outside growers get for their fall stuff, after payin' for their baskets and packin'."

"Phwat ilse waz yez plannin' on sindin' out iv money this year?"

"Well, we planned to make payments once a month."

"Now I got yez," triumphed Tim. "The Cintral ain't done it. 'Twaz Mary's cousin over to Hillsboro waz hearin' one of their mimbers waz quittin' fer that very rason—Sayin', an Association that wazn't keepin' its promises waz good riddance to him."

"But they have, Tim. When I went up to Central I went into that careful because I hadn't got money every month—"

"And still ye're sayin' they sint out money iviry month. Who waz gettin' it?"

"It's this way. I satisfied myself that the Central had sent out all the money it had at least once a month. But it was some job to know what to pay on. Some months they'd pay on Greenins' and Baldwins. Them months we all got some, cause all of us had 'em. Other months they made final payments on some early varieties whatever pools they could close. I didn't have none of the varieties they closed one month and I didn't get any money."

"That's plain, but phwere's the helpin' to the man that's expictin' money?"

"I know it, Tim, and this also is true. Our association bought the barrels and paid for the packin'. They have to take that out of these payments some time. In order to be safe they took it out of the early payments."

"I see. That'll be the rason it's more money yer gettin' in the spring than ither toimes, bespite it's stiddy the money's comin' to yer local."

"That's exactly it, Tim, and that's a big factor. Here's some arithmetic. The Central's been sellin' ten cars a day ever since last October, 160 barrels to the car, is 1,600 barrels. Say they was sellin' at $4.00 per barrel, f. o. b.; that's $6,400 they're gettin' in every day. Storage, pluggin' and paperin' cars is $120.00 per car. On ten cars that's $1,200 they're payin' out every day. About $5,000 goes to the pools. Supposin' they save that up for a month. It would amount to about $125,000."

"Holy Moike, that's an illigant wad iv money."

"Yes, Tim, it is. But now," John continued his arithmetic lesson, "they're goin' to pay that out; $125,000 spread over the 350,000 barrels that was packed is about 35 cents a barrel. It takes nearly all the money from sales for two months just to pay for the barrels before we get any."

"It's down yez can figur' just as fast as yez can up, John. That $125,000 is shrinkin' a divil iv a lot in me istimashun."

"Perhaps if the members got all the money the Central sends to the Locals and then each member turned around and paid for his barrels and his packin' it would seem like more money and quicker payments."

"That's what I done, John, and when I got through I didn't have much left, and nothin' comin' in the spring. That seemin' is remindin' me of Judge Landers—it's an old bachelor he is, waz askin' Mary wan day phwy is it a single man lives longer'n a married wan? Mary said 'Phwy, I don't know, and do they now?' and thin the judge laughin', replied, 'No, but it seems longer.'"

"There's two things I'm glad to see the finance committee has recommended for next year," continued John. "One is to cut down the number of pools on them odd varieties. Take Colverts, Holland, and Ribbed Pippins and the like, most always sell about the same time and the same price. They say pool 'em together."

"That looks sinsible."

"Sure it's sensible. There was 122 varieties of busheled apples this year but 75 per cent of 'em were in only eight varieties. And the last 10 per cent was scattered over 95 varieties. It takes just as long to pool each of them 95 as it does each of the eight. Put 'em in two or three different classes and have time to get out pools on them eight and on peaches and pears and such quicker."

"And phwat's their rikkommindashun?"

"On barreled apples. Soon as packin' is over and checked up, to advance to each local a good big amount per barrel, whatever the bank thinks is safe."

"The Central will have the money from the fruit already sold. The rest of the fruit will be in storage and we'll borrow from the banks on those storage receipts as security to get the rest of the money."

"Then it's in the fall ye'll be gettin' most of yer money, just loike sellin' to dealers."

"It's more nearly like that, and that's the idea. When we used to sell the old way, we used to get some money down to bind the bargain. The Association will match that with a payment on the crop estimate before pickin' starts, same as last year."

"After we got all through we had a settlin' up time, got our money and paid for the barrels and paid off the help. The Association won't pay quite so much at that time but will pay all that's safe. Our local will take

out for the barrels and it's packin' charge but we'll get a good substantial amount."

"Then as soon as a variety is all sold, if the pool shows more per barrel than's been advanced, we'll get the surplus right away. Those payments will be comin' along all winter and spring."

"Uh-Huh," said Tim, for he was thinking.

PETER LENSON.

Future of Apple and Prune Industry

Mr. C. I. Lewis,
American Fruit Grower Magazine.
Dear Sir:

Knowing that you are acquainted with the conditions here in the Northwest as well as in the East, I would like to ask your opinion as to the future of the apple and prune growing industry, particularly in the Northwest.

1. In good years, is there an overproduction of these fruits, or is it simply a matter of insufficient distribution and advertising?

(a) A production of about 30,000,000 barrels of apples per year in this country for the last two years has, as you know, netted the grower very little. In the face of this, new acreage is coming into bearing. Is the history of apple growing in Missouri and other sections about to repeat itself and result in trees being pulled out as they were during that period of over-production, about 1900?

2. Does the large hold-over in dried prunes, and the fact that the fresh prune market became so flooded that in Idaho producing sections a good part of their crop was not harvested, indicate faulty marketing or over-production?

3. Must the Northwest apple crop be a "quality crop" to find a place on the Eastern market and sell for a price that will pay the additional cost of shipping? In other words, is the Northwest apple bought and eaten by the working class? Under local conditions this year, if the grower could sell to the consumer in New York, he would have to get about $2 per box for his packed apples to net him growing costs.

I realize that to predict the future of any business is a difficult question; but any information that you will give me on the subject will surely be appreciated.—W. T. Pentzer, Oregon.

OUR ANSWER.

My dear Sir:

In reply to your letter, will state that it would take several long articles to answer your questions fully. I hope, however, by spring to have run a series in the American Fruit Grower Magazine which will answer your questions.

Regarding the apple situation, I have made the statement on numerous occasions recently that whenever the crop exceeds 25,000,000 barrels the market movement is slow and if the fruit is bought freely, it means little or nothing to the growers. I cannot see where conditions will be any better in the future than they are now, whenever the crop reaches 30,000,000 barrels, unless radical changes are made. This year buying conditions in the country are splendid; everyone in our large cities is at work; wages are high, and people are not worrying about prices. It should have been a year when the consumption should have been enormous, at good prices.

In spite of this wonderful improvement in trade conditions over last year, the men who have the handling of the apples in the east could see nothing but the 10 per cent increase in the crop and could not see the improved marketing conditions. The result is that there has been stagnation.

The trouble with the apple business is not that there are too many middlemen; not that there are too many retailers, despite the fact that there are some 400,000 of them in the country at the present time; neither is the trouble that the price of apples is too high in the retail stores. People are not stopping at prices these days, and there is a tremendous spread between the producer and the consumer no matter what you buy. Hogs were down to $6.50 in the market last week, yet a good loin roast of pork, or the best cut of pork chops, would run 40 cents a pound. Despite the price of cattle and sheep, which is relatively low, a good rib roast or an excellent steak would cost you 40 cents in the better places, a leg of lamb would run from 32 to 45 cents; and yet the strange thing Mr. Pentzer, is that these choice cuts at the very high prices go faster than the cheap cuts. It is harder for a butcher to sell a brisket of lamb at 10 cents than it is to sell lamb chops at 40 cents.

I could go into this at great length and show you that it is not the price that is keeping the people from eating apples. The real trouble with the apple business as I see it is that we have no such thing as orderly marketing, and as far as the shipping states are concerned, and this will include eastern states as well as western, there are far too many people selling apples at the shipping end. Fifteen hundred carloads of apples might be rolling on a certain day and 500, for example, might be booked for Chicago, regardless of the Chicago market, its preference for varieties, qualities, etc. There will have to come a tremendous reduction in the number of men rolling fruit, sending out quotations, sending out tramp car sheets. If there is not, every year when there is a 30,000,000 barrel crop the men that handle the apples at this end will sit down and wait for the fruit to appear on the track, inspect it and just make offers according to their ideas of values.

There seems to be much opposition to f.o.b. buying in the east, just as there is opposition to consignment on the part of the grower. The average apple dealer claims he does not make much money and he shows a tendency to play the same game, namely, to want to handle the fruit at so much a package. The trouble with this proposition, however, is that you pay the man just as much for getting only 25 cents a package for the fruit as you would if you got $3.

Now it was not so many years ago that the orange and banana business was in the same condition as the apple. With a relatively low tonnage, oranges were a drug on the market, no one was making money and it was felt that the orange industry was overdone. Yet this year all records were surpassed when 113,000 cars of citrus fruits were sold in this country, and it now looks as though there would be 125,000 cars at least this year. Yet the citrus shippers are not worrying about retail prices, the number of retailers, the number of middlemen, or anything of the kind. They have evolved, however, a system of orderly marketing. Seventy per cent of the oranges in California is controlled by the exchange and the remaining 30 per cent is largely controlled by several large bodies, such as the Federated Fruit & Vegetable Growers, the American Fruit Growers and the Di Giorgio interests. In Florida, about half the tonnage is controlled by the local exchange and the remainder by several large shippers. The banana business is controlled by a few companies. Out of this has come wise distribution, intelligent marketing and the ability to move increasing tonnage. The growers of apples will have to get into big groups, co-operative or otherwise, in much the same way as the orange and banana growers. These same results have been obtained by the California handlers of walnuts, prunes, figs, almonds and raisins.

As regards your second question, there is a good future for the dried prune industry of the Pacific Northwest, provided the tonnage is standardized and is advertised and more efforts are made to get a good distribution. The Oregon Growers' Co-operative Ass'n has done a wonderful work in that direction. It needs the co-operation of more growers.

(*Concluded on page 30*)

Average size—Stark Delicious Apple Grown On Original Tree Strain Trees

H. L. Anderson & Son raise Stark Delicious that are larger than this one.

"This 30-acre ... Than Farm ...

—so declares **H. L. ANDERSON & SON,** owners of 700 acres of good **ILLINOIS** land in Pike Co., who planted 30 acres of that land to Stark OLD OAK PROCESS Whole Root Trees some years ago.

This little orchard has yielded amazing profit crops for years—far greater than their best corn land.

Though these superior fruit trees were planted on thin hill land, they have richly rewarded the Andersons during the last 6 years with nearly—

$8,000. Profit Crops Per Year off 30 Acres!

In the last 6 years (including this year's, 1923, crop) genuine STARK DELICIOUS (grown on ORIGINAL TREE Strain Trees) and other apples in this little orchard have SOLD "ON THE TREES" FOR $47,000.00!

The Andersons saved all picking, grading, packing and marketing costs.

In 10 years, these superior trees on 30 acres have brought the Andersons 9 crops! —and they declare—**"The balance of our 700-acre farm devoted to general farming and live stock, has not brought us as much money as this 30-Acre orchard in the past 10 years!"**

Isn't that enough to make YOU consider the advisability of setting out a Stark OLD OAK PROCESS Whole-Root Tree Orchard on your spare acres?

40 Acres Bring $15,000.00 Per Year

Jas. Sharpe (former R. R. Fireman) Morris Co., KANS. (See photo above) is a Stark Tree planter and has sold $15,000.00 worth of fruit each year for last 3 years from 40 acres of orchard.

$4,000 Per Acre Each Year for 3 Straight Years

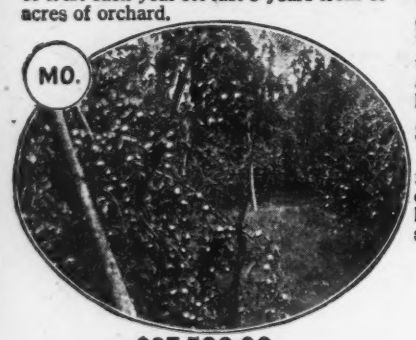
The SPOKESMAN-REVIEW of Nov. 22 states: **"Peter Levander has 1½ acres of Stark Delicious trees. In last 3 years the crop sold for $18,140.00. This is an average of $6000 per year—or $4,000.00 per acre per year for 3 consecutive years."**

ORIGINAL TREE Strain of RED

Stark De...

3-Acre Penn. Orchard Produces Amazing Profits

R. A. KNISELY, a former cigar packer, York Co., **PENN.** started a 3 acre orchard 9 years ago. Stark Delicious and Stayman Winesap are his specialties and he declares that **"One acre of apple trees will produce as much net profit as 20 acres of grain, hay or potatoes."**



$87,500.00 Apples in 5 Years

Dr. E. L. Beal, Greene Co., **MO.** (orchard above)—a Stark Delicious enthusiast—realized $87,500.00 from his 55-acre orchard in last 5 years. He bought the land, without trees, for $60 an acre.

$447.08 Profit Per Acre in Minn.

D. C. WEBSTER, Houston Co., **MINN.,** (a former Postal Clerk) has 15 acres of orchard which for 6 years straight **has paid him $447.08 NET per acre** above **all** costs, selling, picking and barrels! He raises Prize-Winning Stark Delicious in Northern Minnesota.

This one ad alone shows you where Stark Delicious is yielding rich money-making crops in 14 states. **SEND TO US FOR A FREE COPY** of our **NEW, BIG** 80-Page, 4-Color De Luxe Edition **FRUIT TREE BOOK**—and learn how and why Stark Delicious is the Biggest Money-Crop Maker for Orchardists **Everywhere** North, East, South and West.

ADDRESS BOX 189

Send Coupon TODAY for 5 FREE SEEDS of Stark's "BLIGHT-RESISTER" Tomato

This is the tomato that is creating so much talk among vegetable authorities. Over 48,000 home and market gardeners were delighted with it last year. Seed supply was exhausted long before season was over. Better write right now for 5-Seed Sample Packet—and Big 80-Page 4-Color 1924 Stark Vegetable, Flower and Farm Seed Book.

STARK BRO'S NURSERIES

Oldest in America—Largest in the World

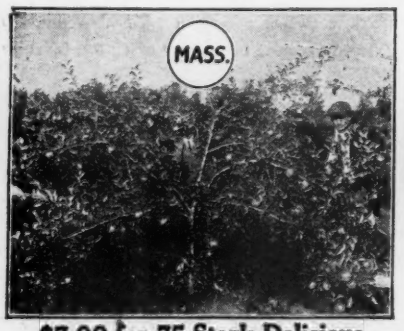
at LOUISIANA, MO., for over 108 Years

$21,800.00 Profit from Little Orchard

J. J. Bohlender, Clermont Co., **OHIO** (See photo above) a Stark Delicious grower, has NETTED $21,800.00 in 6 years from his 12 to 20-acre orchard. He finds orcharding more interesting, more profitable and lighter work than grain farming.

"Stark Delicious Sell for Double the Price of Others"

Don E Minor, Kent Co., **MICH.,** sends in above photo saying:—"We have 1,000 Stark Delicious trees. Wish we had planted 10 times as many. Their apples sell readily for DOUBLE the prices others bring."



$7.00 for 75 Stark Delicious Apples

Photo above shows one of 600 Stark Delicious in famous orchard of A. A. Marshall, Fitchburg, **MASS.,** who sells Stark Delicious at wondrous prices—"$7.00 for 75" in cartons, advertising "$1.00 for every worm hole you find in a Marshall apple." He has also planted a block of Stark's Golden Delicious in his famous orchard.

Gets $1 More Per Bushel for Stark Delicious

H. W. Anderson, Stewartstown, **PENNA.,** sent in above photo. He stated that he **always** gets $1.00 more per bushel for his Stark Delicious than for any other variety. All his Stark Delicious began bearing at 4 years of age.

rchard Pays Me More ps Off My 670 Acres!"

Similar Reports of Rich, Money-Crops Come from Nearly Every State

Stark Delicious orchards in almost every state are pouring like riches into the bank accounts of their owners. Look at the photos shown on these 2 pages!

Read the **facts** printed beneath each photo! Think of the profit there would be in a Stark Delicious Orchard (even a small one) for YOU!

3 Acre Orchard Pays 3 Times As Much As Farm Crops in N. H.

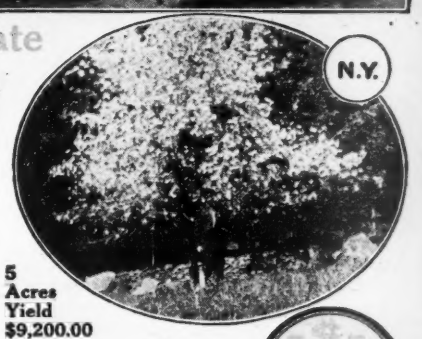
Consider the case of E. S. WALKER, Belknap Co., NEW HAMPSHIRE, who has 3 acres of Stark Delicious and other varieties. He asserts, "My 3 acre orchard pays 3 times as much as farm crops—even on this run down soil. I have gathered as much as 16 barrels from a single Stark tree."

25 Acre IOWA Orchard Pays $510.00 Profit Per Acre Per Year

Tom Enright, Madison Co., **IOWA,** has a 25 acre orchard of Stark Delicious, Jonathan and other Stark Trees. **This little orchard has NETTED him $510.00 Profit per acre per year.** He declares "Land worth $150 per acre for farm crops can be planted to Stark Trees and made to pay **Dividends on an $800.00 per acre valuation."**

3 Acre Indiana Orchard Brings Profits of $1000 Per Year

G. C. Winterheimer, Vanderburg Co., **INDIANA,** has **picked $1000 in net profits per year for past 4 years from his 3-acre Stark Orchard!** He owns an 80-acre general farm but declares: **"There is 3 times as much money in fruit growing as in general farming—and the work is lighter!"**



5 Acres Yield $9,200.00 in 4 Years

Chas. Taylor, Sullivan Co., N.Y. (see photo at right), Stark Delicious Specialist, reports $9,200.00 profit-crops from 6 acres in last 4 years.

Delicious

Obtainable ONLY from STARK BRO'S

Stark Trees Make $50 Ohio Land Worth $1,000 Per Acre

W. F. HINES, Tuscarawas Co., **OHIO** reports that profits from his 10-acre orchard enabled him to buy 110 acres adjoining his. He says:—**"The man who plants 20 acres of good fruit trees now will be on 'EASY STREET' 10 years from now."**

Salesmen Wanted Good Pay Weekly Write us TO-DAY

3 Books FREE

GET 1924 FRUIT TREE BOOK, to learn, also, about the—

Stark's Golden Delicious

"Creating the SENSATION OF THE TIMES Among Fruit Growers" Declared PROF. U. P. HEDRICK, Famous N. Y. Pomologist

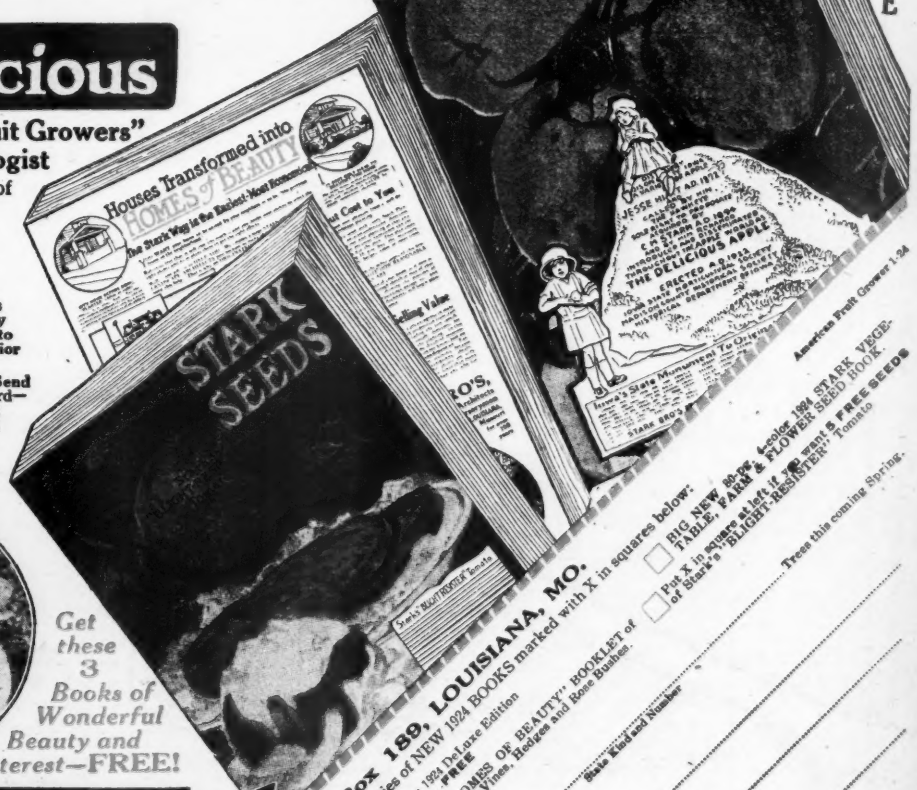
This is the most-talked-about golden-yellow apple ever introduced. Of it, **Prof. Wendell Paddock, OHIO** State Horticulturist, declared—"I look for it to be the starting point of a **NEW RACE OF APPLES."**

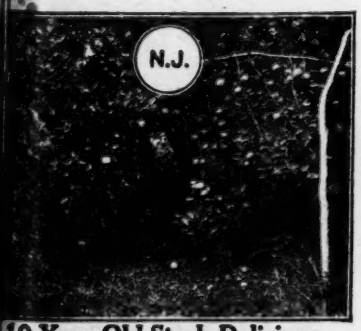
"It will Revolutionize Apple Growing! I have never seen anything like it before!" declared **PROF. H. L. CRANE, Horticulturist, West Virginia Exp. Sta.**

This amazing variety BORE CROPS IN 33 DIFFERENT STATES WHEN ONLY 2 YEARS OLD! It bore despite 3 bad frosts and 2 freezes "in the **worst** Spring for fruit in the memory of the oldest inhabitants."

It's a glossy Golden Yellow apple. Flesh is rich, creamy yellow, with faint tinge of orange—crisp, firm, with a **sparkling, tang-ful flavor** and an alluring aroma resembling that of a great glorious pear—combines mild sweetness and sprightly spiciness—delights everyone. **Averages 50% to 75% larger than Grimes Golden—far superior to Grimes in flavor—a much later keeper.**

Learn ALL about this remarkable apple. **Send Name and Address on Coupon**—or a postcard—for FREE COPY of BIG NEW 80-PG. 4-COLOR FRUIT TREE BOOK—NEW 80-PG. 4-COLOR STARK VEGETABLE, FLOWER and FARM SEED BOOK—also "Homes of Beauty."





10-Year-Old Stark Delicious Bore 15 Bushels

John Barclay, Cranbury, N. J., in sending above photo, stated:—"Stark Delicious one of my youngest bearers and bears very year. Sell for 50 per cent more than ers. I have 350 Stark Delicious and if planting another orchard would make it All Stark Delicious."

20 Bushels On One 16-Yr.-Old Tree

Photo above is one of big block Stark Delicious in Buck Bros' Orchards, Elberfield, IND. They sold their Stark Delicious for $12.00 per barrel and this price aided Buck Bro's get $50,000.00 crop from 40 acres!

Get these 3 Books of Wonderful Beauty and Interest—FREE!

5 SEEDS FREE

STARK'S "Blight-Resister" Tomato

—the most sensational tomato ever introduced—resists wilt and blight—Send Coupon for 5 seeds **Free**

STARK BRO'S, Box 189, LOUISIANA, MO.

Send me at once **FREE** copies of NEW 1924 BOOKS marked with X in squares below:

☐ BIG NEW 80-pg. 4-color 1924 STARK VEGETABLE, FARM & FLOWER SEED BOOK.

☐ BIG NEW 80-pg. 4-color 1924 DeLuxe Edition of STARK FRUIT BOOK. **FREE**

☐ SPECIAL EDITION "HOMES OF BEAUTY" BOOKLET of Ornamental Trees, Shrubs, Vines, Hedges and Rose Bushes.

☐ Put X in square at left if you want **5 FREE SEEDS** of Stark's "BLIGHT-RESISTER" Tomato

I may plant..... Trees this coming Spring.

Name.....

St. or R. R. No.....

P. O.....

State.....

State Kind and Number

American Fruit Grower 1-24

Breeding Cold Resistance into Citrus

by C. A. Whittle

FOR MANY years an effort has been made to increase the resistance of citrus trees to frost damage in the hope of extending citrus culture further north than the now recognized safety zone. Back in 1904 Swingle and Webber of the United States Department of Agriculture developed the citrange, which is a cross of the hardy Chinese trifoliate orange and the common sweet orange, and thereby secured hybrids capable of resisting cold weather better than the sweet orange. But it was found that while the citrange was quite resistant to cold during its dormant stage it was too easily forced into new growth in spring and late cold snaps often did it severe damage.

The next step was to look for a source of hardiness during dormancy plus a tendency to hold back growth and resist cold snaps in the spring. These qualities were found in the kumquat orange.

Efforts to hybridize the trifoliate orange and the kumquat to secure the high degree of dormancy and cold resistance that inhered in both, proved a failure. They seemed physiologically antagonistic and no hybrids derived from the combination gave any promise.

Baffled in that direction Swingle and Robinson of the Bureau of Plant Industry of the United States Department of Agriculture, turned to the citrange, the hybrid which was developed at the outset in 1904, and with this successful union was made with the kumquat, the consequent product being named citrangequat. This combination affords hardiness during winter and prolonged dormancy by which spring cold snaps are avoided, thus laying the foundation for citrus culture farther north than has hitherto been safe.

Another successful effort of these workers in hybridizing is in crossing the lemon and kumquat. Both limes and lemons are not grown successfully in Florida because of their susceptibility to cold. If a successful resistance to winter killing is brought about by crossing with kumquats, the lime and lemon, or more properly limequats and lemonquats, may be grown in this country and serve the purpose of limes and lemons brought from abroad.

The promising citrangequat is one-half kumquat, one-fourth common orange and one-fourth trifoliate orange. The parent citrange was known as Thomasville citrange, having been developed at Thomasville, Ga. The citrangequat seedlings display great vigor and grow quite rapidly. Records of the investigators show that the first year growth of citrangequat was as much as 61 in., while a kumquat was only 24½ in., and often the citrangequat is larger than any of its three parent species.

Character of the Fruit.

The fruit of citrangequat average much larger than the fruit of kumquat. Abundant juice, sufficiently sweet when mature to be pleasing, characterizes the fruit. For the purpose of making ades it can be gathered as early as July.

The scientists who have developed the citrangequat call special attention to the possibilities of having the citrangequat in the home gardens much farther north than it is possible to grow oranges, lemons and limes. It has resisted 12 degree Fahrenheit weather without injury and it is thought that it can resist even colder weather. The evergreen nature of the tree makes it attractive for home gardens. By proper pruning it is claimed it will form a fairly compact growth instead of upright, as is the natural habit of the tree.

Excellent marmalade is made from citrangequat without the mixture of other citrus fruits. The peel is described as mildly pungent and the acid pleasantly flavored.

It is resistant to the greatest scourge of the citrus industry, the canker, and even when inoculated with the disease it proved immune.

Because of the great hardiness, vigor of growth and canker resistance of citrangequat the men who have developed it claim that it may prove of great value as stock for the satsuma orange. The satsuma is the only variety of orange widely grown in the upper citrus belt. At present the satsuma orange stock is largely the trifoliate orange, a thorny hedge plant, but not resistant to canker.

Fruit of Limequat.

A cross made by Swingle of the lime and kumquat at Eustis, Fla., has resulted in a promoting hybrid called Eustis limequat. It resembles the West India lime with fruits much like the lime in quality. It has thin skin that is edible and the fruit is quite juicy.

Since Florida has quarantine against California lemons, it would appear that for its own use, if not for a wider market, the limequat may have a place in Florida citrus culture.

Strawberry Bed Needs Winter Cover

THE PRACTICE of providing some sort of covering for the strawberry bed during the winter months has much to recommend it both to the commercial grower and to the amateur gardener with only a small patch, says the strawberry specialist at the New York State Agricultural Experiment Station at Geneva. Protection of the roots against repeated freezing and thawing during the winter, preservation of the soil moisture in the spring, improvement of the physical condition of the soil, the addition of plant food to the soil, the smothering of the weeds in the early spring, slowing up the early growth of the strawberry plants until after danger from late spring frosts is past, and protection of the fruit from dirt at picking time are some of the advantages to be gained by providing a winter cover for the strawberry bed.

Mulching Materials.

"The best mulching material is one that can be spread rapidly and evenly and, at the same time furnish the greatest protection to the strawberry plants without introducing too many weed seeds," says this Station specialist. "The choice of materials used for mulching should depend largely on cost and availability, that most easily obtained at the least cost usually being selected. Coarse, strawy horse manure is especially desirable, if not too high priced, due to its fertilizing value. Marsh hay, wheat or oat straw, swale grass, and fallen leaves are excellent mulching materials. Even corn stalks may be used to good advantage if nothing else is available. Care must be exercised, however, not to use such fine material that the plants will be smothered. This might follow from the use of sawdust or similar substances. The mulch should be applied to the entire surface of the ground and should cover the plants from 1 to 2 in. The best time to put on the mulch is just after the ground is frozen for the first time in the fall. When the plants begin to grow in the spring, the covering should be shaken up and pulled to one side in the space between the rows in order not to smother the berry plants."

Water Core

AT THIS time of year apples have frequently reached the market water cored. Perhaps no one knows just what causes water core. We do know that it is worse in some varieties, such as the King and Wagner, than it is in others, and that it is also worse, everything else being equal, in the overgrown specimens. There are some strong indications that rapid fluctuations in the moisture content in the soil are a factor in the development of water core. Those falls in which the weather is good for rapid growing and in which heavy rains are frequent are the falls which produce a large percentage of water core.

Culling the Non-Laying Hens

by H. A. Bittenbender

NOT ONLY should males lacking in maturity and vitality be kept out of the breeding flock, but females showing a tendency toward late maturity should be culled and their eggs not allowed to be used for incubation purposes. Hens poorly fleshed can be eliminated from the flock whenever found. Lack of vitality and late maturity are often quite closely associated. The head and body conformation are the best indicators of constitutional vigor and vitality. Birds lacking in vigor and constitution usually have long slender pointed heads with sunken eyes. There is a more or less lack of energy and thriftiness about the birds. Their backs usually have a tendency to taper at the rear. The breasts lack fleshing, are thin and shallow, while in general appearance the birds are long, gangly, and wabble geared with hock and knee joints close together, feet braced outward, and the toenails are long and pointed.

In hens that are strong and vigorous, active and full of vitality the toenails will be well worn, showing evidence of continuous work. Old hens, inactive and less vigorous birds, will have long pointed and unworn toenails. Considerable attention should be paid to the selection of male birds to head the breeding flock. Only those males that show absolute masculine development should be used. Males that are late to develop their masculinity should be considered inferior breeders and not used.

The eggs from pullets that do not start laying before March 1 should in no case be used for incubation purposes if the best results are to be obtained. An excellent method to follow is to separate, March 1, all those pullets that lack in maturity and have not started to lay. These should not be put on the market at this time but should be kept separate from the breeders so that their eggs will not be used for setting purposes. With this system the egg production of the flock can be improved. Birds of the description just mentioned do not have the power to resist disease and infection. Very frequently birds of low vitality are the first ones to contract disease and get sick. Once disease is introduced into the flock it is hard to eliminate it. For this reason it is well to cull those birds that are apt to become sick for the protection of the others.

Whenever a sick bird appears in the flock it should by all means be removed. Unless the bird is valuable from the breeding standpoint, one will be dollars and cents ahead to kill it. All sick birds that are killed should be burned. One of the best methods to use in killing sick or diseased birds is by placing the thumb at the base of the head and with the left hand holding the legs stretch the bird out in such a manner that the head will be dislocated from the neck. The blood will collect at the base of the neck and head and will not be spilled on the ground. This eliminates danger of infection. Sick birds can be determined usually by their appearance. The head loses color, the feathers become ruffled, and the bird stands around in a very listless manner. If the disease is unknown, it is best to call a veterinarian or the county agent, or write to your agricultural college for assistance.

1. Slow Growth and Late Maturity.—During the growing season, it is well to mark those birds falling behind their brood mates and not use them as breeders. Rapid development is essential for market poultry as well as egg production and is an indication of a strong constitution.

2. Physical Weaknesses.—(a) Head, long, narrow, and lacking depth from top to base of beak. Nostrils, small and elongated. Bead, long, straight and pointed. Eyes, dull and sunken. Face and comb often pale. Comb, undeveloped. (b) Body, narrow, especially through back, lacking in depth. Breast, undeveloped and sharp. (c) Legs, long and stiltlike or bending at hocks, giving the bird a squatting appearance. Toes, long; toenails, sharp.

3. Lack of Vigor as Shown By: (a) Dull eye and listless appearance. (b) Indications of disease denoting low resistance. (c) Lack of energy, inactive. (d) Feathers rough, not well preened.

By selecting those birds as breeders that show great physical strength and immunity from the common poultry ailments, it should be possible to build up a strain in which the loss from minor disease would be almost eliminated.

In selecting females to use as breeders, pullets that show marked vigor and vitality and start laying early in the fall are to be preferred. In the case of hens, however, there are certain characteristics which indicate with a fair degree of accuracy what their past production has been and are valuable aids in determining which hens to market and which to keep for another year.

Laying Hens.

1. Have a bright red, fine textured, pliable comb.
2. Are wide between the points of the pubis bones. Bones are thin and pliable.
3. Are soft, loose and pliable in the abdominal region.
4. Are energetic in search of food and consume large quantities if available.
5. Are first to leave the roost in the morning and last to go on at night.
6. Go to roost with full crops if it is possible to get the food.

Non-Layers.

1. Have a dull colored or faded comb, sometimes covered with whitish scales.
2. Are narrow between the point of the pubis bones. Bones are thick.
3. May be tight and rubbery.
4. May be listless and lazy.
5. Are early to bed and late to rise.
6. Eat less than laying hens. Crop often only partly filled at night.

Pullets hatched before June 1, under the right kind of management, should be laying before March 1; at least they should show, upon examination, evidence that they will soon start. Pullets and hens that have layed through the winter or are laying by the first of February can well be put in the breeding pen and the eggs saved for hatching.

A COLORED boy entered the phone booth in a drug store, and one side of the conversation was overheard by the proprietor. "I seen your advertisement las' week for a boy. I'se that boy if you wants me. You already got a boy? But I'se a mighty good boy. My second name am Work. Well, I reckon if he's so almighty good, there ain't no use me trying for his job." As he came out of the booth, the proprietor said, "I've a job for you if you want one." "No thank you," said the boy, "I already has a job. That's my job I called up about. I jus' wanted to check up on myself an' see if I'se giving satisfaction."

AFTER APPLES are once placed in storage, they should not be picked over frequently to take out specked or decayed fruit. It is much better to leave the fruit alone until such time when it is sold, at which time it should be rigidly picked over and graded.

WITH THE CO-OPS.

THERE is a move among McIntosh apple growers of the northeastern states to form an association. Most of the McIntosh apples are grown in New York and New England, with some interest being shown in Michigan. A few are also grown in Colorado and British Columbia. It is felt that as the work increases, new markets will have to be found as at present this apple is appreciated in only a relatively few markets, such as Boston and New York. The apple is of such a nature that it needs a special package, special grading and packing and special propaganda to bring it before the American public. The association will work to obtain a standard eastern package; to carry on an advertising campaign; to be of service to members; to improve cultural methods; to obtain market news and give out information on production, etc.

Among the very prominent McIntosh growers who are already lining up and are showing an interest in forming such an association are the following well-known growers: W. H. Conant, Buckfield, Me.; M. S. Teator, Upper Red Hook, N. Y.; K. B. Lewis, Red Hook, N. Y.; Montsweag Farm (by Arthur E. Pingree), Wiscasset, Me.; Leonard E. Allen, Plattsburg, N. Y.; H. A. Albyn, Bennington, Vt.; C. H. Glover, Hollis, N. Y.; The Chase Orchards, Buckfield, Me.; Karl D. Webber (Scott Farm), Brattleboro, Vt.; W. H. Hart (per John B. Neilson), Arlington, N. Y.; C. L. Witherell, Middlebury, Vt.; M. W. Brush, Germantown, N. Y.; E. A. Hackett, Bolton, Mass.; T. E. Cross, Lagrangeville, N. Y.; E. D. Curtis, Bantam, Conn.

THE HOOD River Apple Growers' Ass'n is very enthusiastic over the reception being given their two handsome Graham trucks, which they are sending through the middle west and south. These trucks were especially built to order, the lines being somewhat on the order of a limousine. They are extremely attractive. They have showcases arranged on the sides and space for about 16 boxes of apples in addition. There is also storage space for baggage and other supplies of the drivers. The trucks are said to be worth looking at alone as things of beauty and with the wonderful apple exhibits, they are attracting large crowds in all the places visited.

THE OREGON Growers' Co-operative Ass'n has launched a prune advertising campaign in Chicago. Very attractive posters have been placed on the elevated, special agents are visiting the various grocers, and some newspaper advertising is being carried on. It is hoped that this will materially increase the consumption of Oregon prunes in Chicago.

In addition, the association is putting on an intensive campaign in the prairie provinces of Canada, carrying big double page ads in the leading agricultural papers.

A NEW movement is being started in the northwest to try and get the entire section to advertise apples. It is hoped a fund may be raised for this coming fall. Frequent attempts have been made in the past to put across such a campaign but they generally ended in failure because one or more sections would not agree to come in. The advertising at present is all local, each valley or section doing their own advertising. There is no question but what a general advertising campaign would very materially increase the consumption of apples.

FOR THE purpose of developing the blackberry industry of Florida, the Florida Marvel Australian Blackberry Ass'n has been formed, with headquarters in St. Petersburg.

Blackberry growers only comprise the association and their first endeavors will be along marketing lines. Booklets which will contain reliable information concerning the merits of Florida Marvel Australian blackberry cultivation, etc., will soon be given out by the association as they are anxious that only the best quality of berries be grown and put on the market.

The following officers were elected at a recent meeting: T. A. Quinn, president; Walter Hullman, first vice-president; D. L. Smith, second vice-president; L. B. Adams, secretary; A. C. McLean, treasurer; J. B. Shoecraft, Jr., chairman committee on ethics; L. L. Reid, chairman scientific committee.

THE CALIFORNIA Avocado Ass'n held its fall meeting in Fullerton, Orange County. J. Eliot Coit, president of the association, presided over the meeting. It was reported that there are at present 1397 acres of avocado trees in California, both bearing and non-bearing, and the production is estimated at 561,300 lbs.

Marketing was the main topic of discussion. George B. Hodgkin, secretary of the association, proposed the formation of a non-profit, non-stock co-operative marketing organization, to be known as the California Avocado Exchange. This matter was to be taken up further at the next meeting.

Professors M. E. Jaffa and A. W. Christie of the University of California were among the speakers at the meeting.

DURING the fiscal year ending May 31, 1923, the fruit sales of the Western New York Fruit Growers' Co-operative Packing Ass'n, Inc., Rochester, N. Y., amounted to $1,807,448, according to the United States Department of Agriculture. The principal commodities handled, the quantity of each, and the approximate returns to growers, were as follows:

Fruit	Quantity	Net Proceeds
Apples, bu.	1,320,000	$1,002,000
Peaches, bu.	189,700	67,400
Pears, bu.	200,000	147,700
Prunes & plums, bu.	31,000	24,500
Grapes, lbs.	100,000	2,500

The total payments to growers amounted to $1,244,400. The deductions from gross sales were $563,018. The largest single item among the deductions was one of $205,920 for storage. Another item of considerable size was $87,527 for freight, detention and demurrage.

THE CALIFORNIA Prune & Apricot Growers' Ass'n, San Jose, Calif., is carrying on three special advertising campaigns in New York, San Francisco and in nine farming districts of the Middle West. The New York campaign is directed toward the development of an increased demand for prunes in that city; the San Francisco campaign is in behalf of prunes in cartons; and the campaign in the farming districts is for the purpose of stimulating the demand for apricots. An advertising campaign, nation-wide, will start shortly in magazines and periodicals having a total circulation of 8,350,000.

Origin of the York Imperial

by John C. Hoffman

ON THE Springwood farm of John C. Schmidt, two miles south of York, Pa., is a monument erected by the State Horticultural Ass'n of Pennsylvania to commemorate the site of the origin of the widely known York Imperial apple. This farm was the family residence of Jonathan Jessop during the early part of the last century. He was a merchant in York and a leading member of the Society of Friends, commonly called Quakers.

In 1820 Jonathan Jessop had a nursery on his farm where he raised young apple trees. His attention was called to a seedling found on the farm of John Kline, now a part of the borough of Hallam, about six miles east of the city of York. This fruit, although imperfect, was found to have a delicious flavor.

Mr. Jessop grafted a stem from this seedling on another tree and thus

The Monument Which Has Been Erected to the York Imperial Apple.

propagated a new variety of apple. He raised a large number of small trees, which had ready sale among the fruit growers of York county. In his own orchard he planted one of these trees and when it began to bear it bore what is known as the York Imperial apple.

Everyone who used this fruit discovered that it kept well and retained its delicious flavor during the winter months, even to May and June. Fruit growers from Virginia and elsewhere ordered trees from Mr. Jessop's nursery and in a few years the apple became popular everywhere it was cultivated.

At first Mr. Jessop's Quaker neighbors and members of the society in Virginia called it "Jonathan's Fine Winter." It next found its way into the state of New York, still retaining the name first given.

In 1855 Charles Downing, a pomologist of New York state, called it the "Imperial of Keepers," and suggested that it should be named the "York Imperial," which name it has since borne. This apple is now raised in all the states of the Middle West, as well as in Virginia, Pennsylvania and New York. It has special commercial value because it can be kept so many months after it has been taken from the tree.

Frozen Apples

WHERE apples have become quite badly frozen, they can often be saved if they are thawed out very slowly. If allowed to thaw out rapidly, the apple becomes soft and mushy. Of course, any apple that has become frozen has lost much of its flavor and aroma and often becomes somewhat mealy; but such apples need not be a total loss.

Subscribe for the American Fruit Grower Magazine—3 years for $1.00.

MARKETS AND MARKETING

ATTENTION in the large marketing centers in the past few weeks has been centered largely on the development of the new f.o.b. auctions. These auctions, however, are handling largely grapes, with a relatively limited tonnage of oranges and apples.

The fruit trade of the United States right now is watching an auction fight which has developed in Chicago. A few weeks ago the two auction companies of Chicago were consolidated and formed the Chicago Fruit Auction Co. It was claimed by the small independents that this company was controlled by three or four big interests, that it would be impossible to make money through its channels, that they had sewed up nearly all its terminals and were rapidly taking steps to throttle the Chicago fruit industry and to get absolute control of sales. This the Chicago Fruit Auction Co. has denied. Nevertheless, several hundred commission merchants, small handlers, etc., have formed the Independent Fruit & Produce Auction Co. They have secured the Northwestern terminal and are holding daily auctions at the foot of the State Street bridge.

The result of this fight will undoubtedly mean a movement of a larger tonnage of fruit for the time being, at least in Chicago territory, but it will probably also mean that the fruit will be sold at a lower price. However, this may stimulate a demand and start the large tonnage of apples into consumption much more rapidly than would otherwise be true.

The Wenatchee advertising campaign has been carried on extensively this year. One feature instituted in Chicago suburbs was having agents call from house to house, attempting to sell the housewife whole boxes of Wenatchee apples, these apples to be delivered through the medium of her own local grocer or fruit dealer.

An introduction of this kind might be rather expensive but it is probably a step in the right direction. It is probably much better than the attempts which were made several years ago to sell such apples on a c.o.d. basis. This proved disastrous to those who attempted to handle it as the housewives often claimed that they had not ordered the fruit, or claimed the variety was wrong, or stated frankly that they did not have the money that day. The plan finally had to be dropped.

This system tried by Wenatchee, however, where a housewife can secure the fruit through her own grocer or fruit dealer, would seem to be a better proposition.

The large movement of apples in the country to storage plants has largely ceased. The western growers rapidly filled up their own storage plants and have now filled practically all the big cold storage plants in the middle west with western boxed apples. Virginia growers are reported as having stored very heavily, while in New York it is reported the cold storage holdings are much less than had been anticipated.

As far as the western boxed apples are concerned, the fruit in eastern cold storage plants is still in first hands, that is, it is held by growers or by western shipping organizations. The fruit, however, is attractive and in good condition and is holding up well.

It is going to be absolutely necessary, however, in the relatively near future for a greatly increased tonnage of both boxed and barreled apples to be moved into the channels of trade. The present system of having buyers go to cold storage plants and buy a car now and then is not moving the tonnage rapidly enough.

If anything, the market has strengthened slightly in both barrels and boxes, although such strengthening has not been very material. The weather conditions throughout the east during the fall have not been conducive to heavy apple consumption. With the coming of cold, snappy weather, it is believed the fruit will move more readily. Oranges and grapefruit have been gradually strengthening on the market despite the big tonnage which is in sight this year. This is due to the fact that the fruit is being very carefully distributed.

There is a movement on the Pacific Coast to form a company for the export of western apples to European markets or other foreign centers. This movement has been on the way for a number of years but it seemed in the past rather difficult to put it across. It is believed now, however, that the time is ripe for the formation of an export organization. The meetings being held in various sections of the northwest are being well attended by very representative men and it is believed that this time an export corporation, which will mean much to the Pacific Coast apple exporters, will be formed.

The expected slump in the European market occurred. It is hard to conceive how the sending of such large quantities of apples to Great Britain within a relatively short time would not be followed by a slump, and the slump occurred, the European market at a time being even less than the American market, from which must be deducted heavy selling and transportation charges, and to make matters worse, about the time the slump came, the exchange took a very disastrous drop.

The failure of the British to be willing to store large quantities of apples as soon as they arrive accounts partly for the situation. Also, the arrival of steamers carrying very large loads at very frequent intervals tended to depress the market. As regards the storage situation, it was said that some English speculators, despite the fact that the English are opposed to cold storage, do practice the storing of fruit on quite an extensive scale.

The British market will probably right itself as the sailings become a little less frequent. The formation of large export corporations in this country, which will have their own representatives abroad, may do very much to clarify the British situation and put their handling of fruit very much on the American basis.

IT WILL surprise many horticulturists to learn that the Georgia pecan crop has a greater value than the famous Georgia peach crop, at least that is the claim being made this fall by the pecan growers, despite the fact that their crop is not up to normal. The sales are good, however, the better grades bringing from 60 to 75 cents a pound. The acreage is increasing very rapidly and the pecan is going to become more and more a source of great wealth to the state of Georgia. Other southern states will also share a like prosperity, as the pecan is being pretty well developed throughout the entire south.

DURING the past two years Michigan has shipped a total of over 24,000 cars of fruit and this tonnage is increasing rapidly. Nearly 10,000 carloads of grapes were shipped and nearly 14,000 cars of apples.

Merchandizing the Michigan Apple

(*Continued from page 8*)

long as they are available in the market. There is no special period when they consume more than at other times. Practically the same comment may be made for the figures in rows 2, 3, and 4, in this same table, representing the monthly sales from three chain store systems in Grand Rapids. Number 2 represents 21 retail stores; Number 3, 11 stores; and Number 4, 23 stores. Rows 5 and 6 present figures for two fancy retail stores in Grand Rapids. Row 7 shows the monthly consumption of apples by one Lansing restaurant. Row 8 shows the monthly sales for one chain system representing about 500 retail stores.

Judged by these figures, the demand of the consuming public for apples is practically constant as long as they are obtainable. For the ultimate consumer, there is no special peak season. His appetite for apples apparently is but little keener in the fall, when the crop is being harvested and the supply is abundant, than it is in the spring when the farmer no longer has apples to sell. Furthermore, to him it makes little difference where the apples come from. He wants them throughout the year, he has the money to pay for them and he gets them. That is his frame of mind. This is the actual condition of the retail trade in apples at the present time. It is a condition with which both retailer and wholesaler are well acquainted and their business is organized accordingly. To put it briefly in the words of a chain store manager: "Merchandising apples is not materially different than merchandising sugar or salt or canned soups. The demand is uniform and steady." Though a perishable in one sense, the apple has in a still larger sense become a staple. This is in a more or less marked contrast to conditions a quarter of a century or more ago. It represents a change that has come about gradually, so gradually that the Michigan grower has not realized it, and to which he has not adjusted his business. It is a change that might be described as "what the furnace has done to the apple business," for the average cellar is no longer a place for storing apples, and indeed many people no longer have cellars. The day when the consumer buys his apples by the barrel to put away for the winter is gone. He now buys by the peck, by the pound or by the dozen. To the producer, this may seem unfortunate, but, unfortunate or not, it is a condition that is not likely to be changed; or, if changed, the change will not be in the direction of conditions as they were. Even legislative action can't help out in a matter of this kind.

When Does the Producer Sell His Apples?

I just stated that the Michigan producer has not readjusted his business to these new conditions of the retail trade. The data presented in Table 3 are sufficent evidence on this point.

TABLE III.—CARLOT SHIPMENTS OF MICHIGAN APPLES, MONTH BY MONTH.

	1919 crop.	1920 crop.	1921 crop.	1922 crop.
July	12	55	516	307
Aug.	608	1,152	1,219	913
Sept.	1,040	1,188	1,772	1,001
Oct.	1,587	2,102	2,327	2,727
Per cent of total	95%	72%	98%	83%
Nov.	175	1,300	112	836
Per cent of total	99%	93%	99%	96%
Dec.	7	175	15	95
Jan.	2	51	12	35
Feb.	0	92	6	33
Mar.	1	70	7	35
Apr.	1	26	1	13
May	2	1	0	1
June	0	0	0	0
Total ...	3,435	6,212	5,987	5,996

Ninety-five per cent of the 1919 crop had been shipped out by November 1 and 99 per cent by December 1; of the 1920 crop, 72 per cent had left the growers' hands by November 1 and 93 per cent by December 1; of the 1921 crop 98 per cent had left the growers' hands by November 1, 99 per cent by December 1; and in 1922, 83 per cent had been shipped by November 1, 96 per cent by December 1. These figures include only carlot shipments, but it is probable that they would be even more striking were truck and other local shipments to be included. In brief, Michigan growers force their apples on the market at harvest time, taking whatever price may be offered. When the consumer's demand reaches its peak in midwinter, Michigan fruit is practically unobtainable and the cream of the season's trade is left to growers in other sections. This fact is mentioned repeatedly by both wholesalers and retailers who say that during August, September and October from 50 to 80 per cent of the apples they handle are Michigan grown; for their holiday trade the proportion is very much smaller and during March and April only 5 or 10 per cent of their apples are from Michigan orchards. New York, Washington and other states are then furnishing them the bulk of their supplies. In other words, in a broad way, Michigan producers are not selling their apples when the consumer wants them. They have a staple product for which the demand is steady, continuous, but they force the trade to absorb it all within a comparatively short period. The situation is comparable to that of a shoe manufacturer who would place all his year's production on the market for the Easter trade, or to that of the sugar importers should they sell the entire season's crop right after the cane harvest in Cuba and the beet harvest in Colorado. Such tactics would demoralize the market for a while, afford shrewd speculators an ideal opportunity for quick returns, and turn the best of the season's trade over to other manufacturers, producers or importers. People want their shoes and their sugar day by day and week by week. They have come to want their apples in the same way. Producers are left the choice between changing the nature of this seasonal demand, adjusting themselves to it or taking the consequences. To change the nature of the demand is well nigh impossible and it may be questioned if it would be desirable were it possible. As yet Michigan growers have not adjusted themselves to this comparatively new situation that has more or less crept in on them unawares. The result is they are taking the consequences.

The Remedy for the Situation.

The practical question is: What is to be done about it? Pack in boxes instead of barrels and baskets? Change grading laws? Revamp marketing machinery? Ship to more distant markets? Obtain lower freight rates? Ship by truck instead of train? Sell f. o. b. instead of on commission? These surely are pertinent questions, but they all deal with minor aspects of the real problem. Work out the solution to any one of them in any way that suits your fancy and you still have the job on your hands of merchandising your product. Suppose you do pack in boxes, suppose you do ship by truck, suppose you do eliminate some middleman, the ultimate consumer will only buy and pay for that fruit pound by pound, day by day, through fall, winter and spring months. Box packing won't make him (or her) do otherwise, nor will lower freight rates, nor an act of the legislature. The situation is an economic one and must be dealt with accordingly.

Fortunately, the solution of the problem is comparatively simple, though perhaps not easy. It is largely within the growers' own control. It may be summed up in the one word "storage." This may be either common air-cooled storage at the farm or cold storage at loading points in the producing districts or larger distributing centers. Michigan fruit growers are now practically without storage facilities. With a commercial production averaging a million and a half barrels annually, storage facilities for at least a million barrels should be provided.

This does not mean that it would be advisable to store all of our ap-

(*Concluded on page 35*)

Insect Pests of the Gooseberry

by C. F. Greeves Carpenter

GOOSEBERRY and currants are attacked by only a few insects in comparison with other crops, and these few are more difficult of control, because most of their work is done in the inside of the fruit and stems.

Gooseberry Fruit Fly.

The gooseberry fruit fly is orange colored, and about the size of the common house fly, but with clouded, instead of clear, wings. The adult fly emerges from its overwintering home in the soil about the middle of May, mates and lays its oblong, white eggs just under the skin of the berries. Egg-laying lasts until the end of June; the eggs hatch into white maggots which work among the seeds, and when fully grown (usually the latter part of summer or early fall) they leave the berries and enter the soil to a depth of a couple of inches, there to pupate and spend the winter. This pupal stage lasts for about 8 or 9 months, and it is during this period that most effective control work can be done by thoroughly cultivating the ground, thus exposing and destroying the overwintering pupae.

The work of this fly is easily discernible for the punctures made by the female, then depositing her eggs, turn either red or brown and are slightly sunken in the berry. The maggot working in the fruit causes it to ripen or drop prematurely.

Another control method (and one which should be put into practice immediately) would be to cover every bush with fine netting, tying it tightly at the surface of the soil. This would not, of course, be practicable on a large scale.

Gooseberry Borer.

Another pest of the gooseberry in the northern and central Sierra Mountains is the gooseberry borer, a dull black beetle measuring about an inch. The larvae of these beetles enter the stem at a fork of the bush, and burrow downwards into the roots, which results in the death of the stem or, in more severe cases, to the whole bush. Such parts should be cut out and burned.

Currant Borer.

The adult imported currant borer is a clear-winged moth measuring about half an inch, with a wing expanse (from the tip of one wing to the tip of the other) of about three-quarters of an inch. The body color is pitch black, with six yellow bands around the body and two longitudinal stripes on the portion between the head and the abdomen. The egg-laying period is during May and June. The light brown, spherical eggs are laid singly near the buds and these quickly hatch into yellowish, black-headed caterpillars, three-quarters of an inch long. These bore into the cane and feed upon the pith. By fall their work has extended to the roots, where they hibernate. In spring pupation takes place, and in May the adult moth emerges by cutting an exit hole in the stem.

Canes so attacked quickly show a sickly appearance and die. Such canes should be cut out and burned or, where the damage is noticed in the live canes, a wire should be inserted in the hole made by the entrance of the larva, and the pest speared and killed in this manner. The latter method would save any living canes from being cut out.

Should the familiar red spider be present, dusting with sulphur will quickly control this pest.

The Fig

by J. E. Fitzgerald

ONE OF the oldest fruits known is the fig. The fig and grape are mentioned quite often in the Bible. It is a great favorite with nearly every family, to eat fresh and for preserves. It makes the most delicious preserves of most any fruit. While this is an old fruit and one that can be grown in all of our southern states, yet there are quite a number of people that have never seen figs grow. They grow acres and acres of this fruit in the extreme South. It is a mistaken idea that they will not grow anywhere else. Here in central Texas, where they will freeze down in the winter, we have fine luck growing them. After they sprout up in the spring, they will then have lots of fruit that will begin to ripen in August, and from then on till frost we have lots of figs.

I do not know of a more profitable fruit for market or home use than the fig. It is an old established fruit in the "Old States" where the winters are not quite so severe and where it rains lots. But they also bear fine where the rain is not so abundant. When the trees are protected some way through the winter—or planted on the south side of some large building or hedge—they will not freeze down and will have earlier fruit than they do when they have to sprout up again every spring. Sometimes the little moth or candle fly is a nuisance as you then have to gather the figs before they get real ripe; but when you are not bothered with this insect it is a great deal better to let the figs stay on the bush till they are real ripe. They are very easy to preserve; just wash and stem and put them in a stone or granite vessel, adding three-fourths as much sugar as fruit, and let stand over night and cook in the juice that will be in the vessel the next morning until the syrup is as thick as desired.

They are also good candied and used to fill layer cakes and to make the famous Fig Newtons. The trees need no special attention—just keep the ground around them clean like you should around any other fruit tree.

Future of Apple and Prune Industry

(*Continued from page 23*)

I am satisfied that you did not have too many fresh prunes in Walla Walla and Idaho this year but that there is something else at the bottom of your troubles. I think I know what some of these things are but I prefer not to state them at this time; but despite the fact that peaches and pears were selling well, your prune handling was a terrible failure.

As regards your third question, I would say "Yes." The Northwest apple crop must be a quality crop—fair size, high color and must be delivered at the market in a firm condition so that it will stand storage. As far as the working class is concerned, they are today among the best paid people in the country—perhaps better able to buy high priced Northwest apples than are the middle class.

I am sorry I cannot go into these things more in detail but I know you will be interested in watching for some of my articles in future issues. —C. I. Lewis.

Encourage Birds in Orchards

by Agnes Hilco

THERE are a good many birds that will come to the orchard both in summer and in winter if we will study their habits and their needs and provide conditions to suit. In winter, nothing will attract birds more than some food where they can get it and not be exposed too much to their enemies. A platform high up with a place to fasten suet so it cannot be carried away by larger birds, and where grain can be distributed, will call many birds that will stay with us, while bird houses in summer will entice the nest builders. The purple martin is a home lover and will come and take possession of a house and colonize it until you will have the air full of them, and they catch a multitude of injurious insects, for they are always on the wing, seeking them. Woodpeckers seek insects on trees in winter, and there are several other small birds that do the same.

The Orchard Home Department

by Mary Lee Adams

Medical Aid Free for All

MANY a poor mother is haunted by the thought that, should her children fall ill there will be no money with which to pay a doctor's bill. Should her husband need the attention of a physician to fit him for the toil that provides bread for the family, he may be forced through poverty to postpone taking the necessary measures until too late.

The idea that a day may come when the moneyless will be able to command exactly the same degree of medical attention as the millionaire might be dismissed as a Utopian dream were it predicted by a less authority than the President of the American Medical Association, Dr. Ray Liman Wilbur, who also enjoys the distinction of being President of Leland Stanford University.

When such a man tells his fellows, as he did at the November convention in Des Moines, that their next step forward will be the giving of medical aid regardless of the patient's ability to pay the bill, we may be sure that he speaks not in ignorance of the already astonishing amount of charity practice which even poor and overworked doctors now give as a free will offering to suffering humanity. Nor can he disregard the economic difficulties which present themselves. Some solution must have occurred to this doctor's experienced mind.

As the poet Lowell has taught us, pretty much the only thing we get without paying for it is weather. "No price is set on the lavish summer; June may be had by the poorest comer." Yet how wonderful it would be to see this eminent doctor's prediction come true. The picture he draws is cheerful. "Not only would life be prolonged and human happiness increased, but the whole aspect of life would be altered," if all alike might benefit by all that the doctors know.

Men Make Family Loaf

THE SENTIMENTAL among us used to thrill when our phonographs assured us that it was "Apple-blossom time in Normandy." How sweet, how pastoral, how fragrant our vision of that lovely land. But how about when it's bread-making time in Normandy? That's not quite so sweet to our taste.

The Norman peasant regards bread-making as man's work, and shudders at the brutality of the American who leaves this mighty task to the women. Once a month, and once only, bread is made on Norman farms. The loaves are three feet round and nearly a foot thick. They are mixed right on the floor of the barn and baked in huge brick ovens built in the stables.

The first kneading is done by spanking the dough with clubs flattened at the ends. The second kneading, after the lump of leaven has done its work, is accomplished by a strenuous athletic process from which even the most militant female might shrink. Donning special kneading sabots, or shoes made of white wood, the farmer and his men leap upon the mass of risen dough and kick, stamp and jig about in it until they are fairly exhausted as they stumble round in the heavy, adhesive stuff.

No wonder the resulting loaf is somewhat dingy and doubtful looking, but the Norman peasants probably do not care even to close their eyes as they bite into the trodden bread which, we are told, is "sweet, dry, and decidedly palatable."

Can You Express Your Views?

EVERY woman should be able to "think on her feet," as the saying is, and not be so embarrassed by the sound of her own voice that she is unable to rise and express herself clearly in the presence of any considerable gathering. She misses a great deal if she cannot do this.

How often we hear a woman coming away from a club meeting or community gathering say, "Oh, dear! I do wish I could have said what I think when that question came up. I just know they'll regret having made that decision but, of course, it's too late now."

What is it that prevents these women from saying what they want to? Most of them will tell you that they are "shy" or "bashful" or "so retiring." They would come a lot nearer the truth if they said they were so self-conscious that they were unable to speak for wondering what kind of effect they might produce.

To some this may sound unsympathetic, but they may see how true it is if they will just think of some circumstance which would move them so deeply, so keenly, that they would jump up in their places and speak right out without any thought save of the thing they felt they must tell the others. That after all is the secret. Know what you wish to say, and then say it without thought of self.

Many women really are shy, bashful and retiring, but if they are not self-conscious they will not be too embarrassed to speak before a number of their friends and acquaintances. The woman who cannot express herself at her club or society meeting, must give up hope of being a real influence among her fellows.

Mexico Sees the Light

CHILD labor under the age of twelve years has been abolished in Mexico. We may not think this much to boast of, yet when compared with former conditions there it marks an immense improvement.

The working day of children between twelve and fourteen years of age has been constitutionally fixed at six hours. Previous to this amendment the working day of children between four and fourteen was from dawn till dark. We do not need the words of Senor Roel, New York Consul General from Mexico, to assure us that such hours of labor resulted in children who are dwarfed mentally, morally and physically.

A really hopeful note is that the government is rapidly establishing both day and night schools for the child workers of Mexico. Surely it cannot be long before the uttermost parts of the earth are awakened to the heinousness of unregulated child labor.

The sooner this happens the more we will rejoice. Let us remember, however, that every forward step taken by other nations reduces our own lead in this vitally important matter of humane legislation for the protection of children. The women of the United States must persist in their efforts to keep our country in the forefront of such legislation.

Little Homes of Laughter

The little homes of laughter can be found
on many a street,
And it's there that men and women in
the bond of friendship meet;
Oh, the mansions on the highway may be
handsomer to see,
And the rich man's lawn be lovely with
the bloom of plant and tree.
But the glory of the nation and its
strength from day to day
Are the little homes of laughter where
the children romp and play.

The little homes of laughter, homes the
thousands know and keep,
Where the mothers croon at evening as
they rock their babes to sleep,
And the fathers in their shirt-sleeves find
some little task to do—
Oh, it's there you'll see the glory of the
old Red, White and Blue;
In the little homes of laughter, standing
North, South, East or West,
It is there you'll see the nation at its
finest and its best.

—Edgar A. Guest.

It's Good to Live in 1924

THE BEST greeting I can give our orchard women this New Year is: "Thy own wish wish I thee." If each of us could but have our darling wish we'd be as happy as larks. So we think. Many would wish for money, many for love, some would wish for fame and some for rest. "Thy own wish wish I thee in every place."

But though wishes are various, there is one which it is safe to say 99 women out of 100 indulge in their inmost souls. We all would like to be young and handsome. If we are "getting on" or have not been blessed with beauty, we may still be commendably cheerful, but where is the woman who would not accept a load of good looks if offered to her, or who would not reject the load of years if burdened with them?

It befits the New Year season to moralize on good resolutions. Instead, I'll venture to be frivolous at the risk of confirming the judgment of a reader who informs me that I write very much as raving maniacs talk. It argues a tough fiber on my part to rally serenely from such a blow. I return to the agreeable consideration of youth and beauty.

Past Her Prime at 21

Youth and beauty being almost synonymous, we look back with some pity on women of a time when, far more than now, woman's chief stock in trade was physical attractiveness, and when it faded so soon. If we may believe the literature of a century or so ago, a woman's prime passed with her teens. Whether the beauty of 19 became really less lovely at 21 matters little. She was supposed to have diminished charm and, as every woman knows, it makes far less difference what she actually looks like than what she can make people think she looks like. Small wonder that she early gained the reputation of diminishing her age in hopes of enhancing her assets.

A Longer Day Dawns

Conditions are brighter now even for the older woman, and a perfectly glorious prospect opens for the young girl of today. Custom and science unite in banishing many of the signs of age for the period of her natural life. That period is being constantly prolonged, which would be but a doubtful good if health and activity were not also maintained.

But health and activity go hand in hand. Grandmother no longer knits in the chimney corner as of yore. More than a hundred years ago there was many a grandmother of 36 who sat to one side as a mere spectator of the whirl of life. "Her show was over" and she took no active part.

There is an increasing army of women engaged in business, in the professions, in public life, art, literature, etc., who are often just arriving as they near 40. Women who are engaged in the great accomplishment of making a successful, happy home have no idea of allowing professional women to get ahead of them, and have cultivated a lasting charm.

We Have Learned Much

Out of the welter of theories and fads thrust upon us for the perfecting of our minds, souls and bodies, women have extracted some sound knowledge, aided by experience and observation. Much has been gained from the exercise enthusiasts. They have taught us that even the brain grows feeble if not kept actively employed, and certainly our moral muscles weaken if they do no wrestling with the powers of evil.

As for our physical condition, it becomes lethargic and reacts on our nerves. We may be bold enough to disobey the injunction to hike five miles a day, rain or shine, we may even defy the "daily dozen," but if we use our muscles regularly in work or walking or sports, we know there's a much better chance to feel well and to act agreeably. Active, shapely and graceful bodies are the reward of proper exercise.

We have learned also from those who place their sole dependence on fresh air. Not all of us have been persuaded that no one can live who keeps the windows shut at night, but all know the "stuffy" feeling that accompanies prolonged exclusion of fresh air. We know we feel better and brighter if we have plenty of pure air at all times. Brighter eyes and clearer skins result.

Again—the disciples of hydrotherapy would lead us to conclude that health, beauty and longevity hold direct relation to the number of hours spent immersed in water or showered by hot sprays. Few of us care to go the lengths recommended by Dr. Benedict Lust who advocates eight hours under a hot spray as a grand rejuvenator. Still less would we venture on the extreme of the famous Prof. Hebra of Vienna, who has kept patients immersed in warm water for as much as nine months. Yet we do accept the fact that water applied frequently and lavishly to the skin is healthful, beautifying and rejuvenating.

We Eat Too Much

When the lower animals are ailing, they fast. Many physicians maintain that we too would be much better for more frequent fasts and a generally lighter diet. The gigantic stretch of 90 days without food is claimed by a successful practitioner to have resulted in great benefit to the patient. Some of the menus suggested as sufficient make us hope that should we ever be condemned to partake so sparingly we might first be turned into humming birds.

Yet we have heeded the warning. There has been a tremendous change since the days when a single meal was graced with barbecued oxen, heavy venison pasties, roasted sheep and spitted birds, with little alleviation from fruits and vegetables. Our digestive systems not being now so severely taxed, we accumulate fewer old age poisons.

Mind Over Matter

Though we may have no leaning toward Christian Science, though we may not repeat "Day by day in every way" as a sure defense against all mortal ills, yet we know that cultivation of a calm, contented spirit is unexcelled as first aid, not only in actual bodily well-being, but in keeping the countenance unlined and youthful.

Tests recently made at a number of colleges show that in the last few decades women students have gained more than one inch in height and show a substantially higher degree of general physical development. Increase in athletic sports and the accompanying greater ease, lightness and freedom of dress have contributed much to this improvement in physique.

At one time this greater development would not have been considered any improvement at all. A quite lovely old lady once said to me, "I would have been a very pretty girl, my dear, if I had not been unfortunately tall." She was five feet six inches, and it seemed rather indelicate to attain such masculine proportions.

It is good to live today when women are better off in most respects than they were many, many years ago. That the woman of tomorrow may be born into still brighter times is worth some effort on the part of this generation. That glorious tomorrow may be hastened if we carry out the orders of the Big Five in the Health Department —Doctors Fresh Air, Exercise, Cleanliness, Moderation and Cheerfulness.

"Why is the little fellow crying?"
"Because he can't have a holiday."
"Why can't he have a holiday?"
"Because he doesn't go to school yet!"

Home Laundering Process

THERE is a logical, systematic, efficient process for home laundering that, when followed, will insure the proper treatment of every garment with the least time and labor expenditure. Every woman owes it to herself and family to have a good system and follow it. The family owes it to mother to provide her with the proper equipment and a convenient laundry room to lighten her load.

The first thing to do is to decide on wash day and then stick to it as far as is possible. To the confirmed Monday-washers, it will be somewhat of a shock to know that there are some points in favor of Tuesday as wash day. By washing on Tuesday, Mother has a chance to put the house in order after the week-end, do some cooking, and send out the flat pieces to the laundry (if she happens to find it convenient). Then, too, she has a chance to do her mending and stain removal so they will be ready for wash-day.

The advocates for Monday have just as many good arguments: The clothes have plenty of time for drying and ironing, the family changed clothes at the end of the week, and many extra things were worn and soiled over the week-end. Washing on Monday gets it off our minds the first of the week so that we are ready for other things after that. Each housewife should decide on the day and stick to it under ordinary conditions.

The first step in the actual washing process is to gather up all the soiled clothes. Then sort them according to color, fabric, degree of soil and stains. The least soiled white clothes will form the first washing, and this will usually include table linens. Colored garments which will fade should never be put with the others. Delicate fabrics, laces, organdies, and silks, should never be put through the regular machine washing as there is danger of spoiling them.

It pays to mend nearly all pieces before washing, especially any article which will be made worse in the washing, such as knit wear, hosiery, crochet or lace. If there is danger of stretching, the edges should be caught together, at least. For outside garments, it does not pay to do them up nicely, and then wrinkle them by mending.

Next comes the task of stain removal (discussed in detail in the July issue of the American Fruit Grower Magazine). First determine the type of stain, then decide on the proper method of removing it. If the goods is colored, the matter will be greatly complicated as stain removers have a tendency to take out the dyes also. The stain is much easier to remove if taken off soon after it gets on. Use dilute solutions if possible, and wash the garment immediately afterwards to prevent any destruction of the fabric or color. Paraffin may be put around the spot to prevent fading of the goods in removing the stain.

Soaking is the next process, and farm washings will be greatly lightened if the clothes are put through a soaking water before they go into the hot suds. This can go on in conjunction with the stain removal, the white clothes and non-fading colored ones being ready for soaking. Certain stains, such as blood, are removed by soaking, but it should be done in a separate pan.

The color should be "set" in all colored clothes showing a tendency to "bleed," before trying to soak or wash them. Salt should be on hand to use if a color begins to bleed. Two cups of salt to the gallon of water is usually effective, but more salt may be added until the bleeding stops. Salt may be used for all colors, but it is most effective for browns, black, pinks and red. Vinegar is the mordant for blues—use one-half cup to the gallon of water. Sugar of lead (deadly joison) is best for lavenders—use one tablespoonful to 1 gal. of water. Be careful in using this chemical as it is poison.

Now comes the actual washing process, which will be different for colored and for white clothes and for silks and woolens. This discussion will be limited to the washing of cottons and linens, the silks and woolens being reserved for separate treatment.

Plain white pieces will stand much rougher treatment in washing than will colored garments. The main object in white washing is to have them white. Use lots of hot water and plenty of soap. The soap is best when already dissolved to form a soap jelly—use 1 pt. to the rubbing of clothes and add more as needed. The addition of one-half cup of washing soda solution (made by dissolving 1 lb. of washing soda in 1 gal. of water) will go a long way towards insuring white clothes.

A washing machine is almost a necessary piece of equipment for the farm housewife with her heavy washings. The clothes should now be washed in the hot frothy suds, either in the machine or on the board. Stiff articles, such as jumpers, overalls, and corsets, can be more easily cleaned if a brush is used on them. Wash on both sides. If you use a wash board, turn the garments wrong side out during the washing process so as to clean them on both sides.

When washed wring them out of this water, rinse and soap the articles if they are to be boiled. Rinsing removes any dirt loosened by rubbing.

White clothes are made whiter if they are boiled, provided the boiling is properly done. After rinsing, the clothes should be soaped all over, and then placed in the boiler with clean cold water. Do not pack in so solidly as to prevent floating. Small pieces of soap may be thrown into the boiler to make additional suds. Bring to the boiling point and boil briskly for five minutes. A scum will not form if sufficient soap is used to soften the water.

Stir and press clothes down in boiler with clothes stick. When scalded, take out clothes with the stick, place in a tub of hot water and then cold water. Rinse in two clear waters to remove all dirt and soap. Never stint on the rinsing process as it is one of the main points in white washings.

While the first set of clothes is scalding, rub out the second in the same manner, and then continue with the third, until all the clothes have been washed. Boil the sets in turn, using clean water in the boiler each time.

Bluing is the next step in washing white clothes. Remember that it is not possible to over-rinse, and that any soap left in the garments may combine with the bluing to cause iron-rust. Add the bluing to a tub of clear water. If ball bluing is used, tie it in a piece of cloth and rub it in the water. Test the "blueness" of the water in the hand or on a small garment, and do not have it too blue. Stir the water each time if more blue is added. Never add bluing when clothes are in the blue-water, as they will be streaked.

The clothes should be shaken out before going into the bluing so they will not become blue-streaked. If they are quite yellow, they may remain in the blue-water for some time, otherwise one or two dippings is enough.

Methods of removing excess bluing are to rinse if mild, to reboil, or to put on the grass in the sun.

The washing of colored clothes requires more care. Difficult colors should be washed separately by hand. Colored clothes should not be rubbed any longer than is necessary to remove the soil. Avoid strong soaps and, of course, washing powders and washing soda should not be used because of their tendency to bleach. Use lukewarm water instead of hot water, and turn the garment inside out in washing. It is essential to rinse well to remove all soap. Boiling is naturally not to be thought of for colored clothes.

No bluing is necessary for colored clothes, and excessive starching is not desirable. The clothes should dry in the shade to prevent sun-fading. Do not double or fold the garments in sprinkling as it may streak the color. Too hot an iron in ironing is sometimes harmful to delicate things.

Now we are ready to discuss the starching process and the making of starch. Rice flour is best for very fine, delicate garments. A blend of two-thirds wheat flour and one-third cornstarch makes a heavy starch, while the blend of two-thirds cornstarch and one-third wheat is the ordinary commercial gloss starch. Good starch must be clear and transparent, resistant to moisture, and should not stick to the iron.

To make the starch, pour boiling water over gloss starch that has been dissolved in a little cold water. Boil five minutes till the starch is clear. A little paraffin or borax is sometimes added to the hot starch to give a glossy finish to the ironed garment. When ready to use the starch, dilute it with plenty of water, and rinse the clothes to be starched through it. Do not put all the starch in at once, but keep on adding some gradually as the other is used out. Different garments will require varied amounts of starch. Gum arabic, borax or sugar in themselves form excellent starches for delicate thin materials.

Certain colors and certain types of garments may well be tinted in the starch water. Bluing is sometimes used for blue garments. Tea will give a creamy tint, and coffee will result in a tan color. Coloring, including dyes, are often used for the more delicate colors.

Do not starch parts of garments that do not need it, such as shirt tails. Do not starch lacey things, as a usual rule. Linens do not need any starch at all, while part linen materials will need some starch. Leave undergarments unstarched insofar as is possible.

The clothes should be wrung out of the starch water, shaken out and hung up to dry in good shape. When dry they should be brought in for sprinkling and ironing. It is well to sprinkle the night before, taking care not to use too much water. The ironing and folding process will be discussed in another article, to appear later.

Honey Recipes

WAR SUGAR conservation experiments taught us many valuable points in the use of honey as a sugar substitute to make delicious cakes and puddings and pastries. We should not give these good things up just because the necessity for sugar economy is gone. This month I am giving a set of honey recipes which have been carefully tried out and found entirely satisfactory.

Honey may be used to replace either sugar or molasses, the honey flavor being delightful and more delicate than molasses. Honey requires less soda than molasses, one-fourth to one-half teaspoon to 1 cup of honey being the usual amount. In substituting for sugar use 1 cup of honey to 1 cup of sugar, using one-fifth less milk for each cup of honey substituted to keep the same volume of liquid. Spices are especially favored for use with honey in all flour mixtures.

Soft Honey Cake.

½ c. butter	1 t. soda
1 c. honey	½ t. cinnamon
1 egg	½ t. ginger
½ c. sour milk	4 c. flour

Rub the butter and honey together; add the egg well beaten, the milk and flour sifted with soda and spices. Bake in a shallow pan.

Hard Honey Cake.

¾ c. honey	½ t. cloves
⅓ c. sugar	Speck white pepper
3½ c. flour	Speck salt
1 egg	½ t. soda
¼ t. ginger	1 T. water
1 t. cinnamon	2 oz. blanched almonds cut in small pieces or chopped
½ t. ground cardamon seed	

Sift together the flour and spices, dissolve the soda in the water, beat the egg and combine all the ingredients. Beat or knead the mixture in a thorough manner. Cook a small sample. If it does not rise sufficiently, add more soda and honey; if it falls, add a little more flour. Roll out the dough to the thickness of about ⅜ in. and bake in a hot oven. When the cake is done glaze it with a thick sirup of sugar and water and allow it to dry in a slow oven, or in some other warm place. While it is still warm, cut it into long strips, or it may be left in one long cake, to be cut into thin slices when served. This cake will become very hard on cooling but will not be too hard for eating after several weeks. It will keep in good condition for an indefinite time.

Honey Icing.

1 c. sugar	¼ c. honey
¼ c. water	1 or 2 egg whites

Boil sugar and water for a few minutes and then add honey. Cook until it forms a drop in water. Beat white of egg until stiff and pour syrup over it, beating constantly. Remains soft for some weeks.

Honey Jumbles.

1 c. honey	¼ c. water
⅓ c. molasses	½ t. vanilla
2 t. (level) soda	1½ c. (or more) flour
1 t. salt	

Drop from teaspoon into buttered pans. Bake in moderate oven.

Honey Ice Cream.

1 qt. cream	2 t. vanilla
½ c. honey	

Combine the ingredients and freeze.

Baked Honey Custard.

5 eggs	¼ t. cinnamon
½ c. honey	¼ t. salt
4 c. scalded milk	

Beat eggs a little, add other ingredients and bake in cups set in a pan of water. Moderate oven.

Honey Baked Apples.

8 medium sized apples	⅔ c. honey
½ c. water	Cinnamon
	2 T. butter

Pare, halve and core apples and arrange in baking pan. Pour water into pan, put honey over apples. Dot with butter and dust with cinnamon. Bake until done.

Honey Charlotte Russe.

1 qt. cream	½ c. delicate honey
6 lady fingers	

Chill the honey by placing the dish containing it in a pan of ice water. Whip the cream and add to it the honey, mixing the two well. Line a dish with lady fingers and fill it with honey and cream. Serve very cold.

Honey Raisin Apple Butter.

½ c. honey	½ c. finely cut raisins
½ c. water	¼ c. each of spices and salt

Heat to boiling. Add 4 c. of finely cut apples. Cook slowly until a good butter consistency is reached. This recipe makes one pint.

Boiled Honey Custard.

2 c. milk	½ c. honey
3 egg yolks	⅛ t. salt

Mix honey, eggs and salt. Scald milk and pour over eggs. Cook in a double boiler until it forms a creamy layer on the spoon. Suitable for use in place of cream on gelatine desserts or where any custard sauce is wanted.

Honey Cookies.

½ c. honey	2 eggs
½ c. molasses	1 c. thick sour cream
1 t. soda	½ t. ginger
½ t. cinnamon	⅛ t. salt
5 c. flour (graham or part graham and white) enough to roll.	

Beat eggs well, then add molasses, honey and sour cream. Sift spices, salt, soda and flour. Roll out, cut and bake in hot oven.

Recipe makes eight dozen cookies, medium sized.

Bran Honey Cookies.

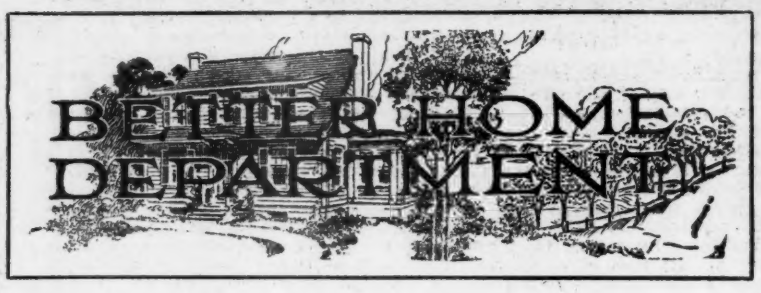
¼ c. honey	1 t. soda
¼ c. molasses	⅛ t. salt
¼ c. water	¼ t. cinnamon
1 c. bran	1½ c. flour

Drop from spoon. Bake in moderately hot oven. Recipe makes three dozen cookies at small cost.

Honey Drop Cakes.

¾ c. honey	1 egg
¼ c. fat or butter	1½ to 2 c. flour
½ t. cinnamon	½ t. soda
⅛ t. cloves	1 c. raisins

Heat honey and fat until fat melts. Add well beaten egg, flour, spices and soda and raisins. Use enough flour to make the cookies of consistency to drop from spoon.



Value of Laundry Equipment

by E. W. Lehmann

ACCORDING to Prof. Galpin of the University of Wisconsin "The general adoption of power washing in rural life would as a single measure banish chronic fatigue and add to the assets of the home a surplus of feminine energy and enthusiasm."

The results of a survey made by the United State Department of Agriculture show that the family washing is done by the women in 97 per cent of the farm homes in the central states. Few men realize the amount of labor involved in doing the job of washing—this is to be expected when we realize this job is done almost entirely by women. Only about 10 per cent of the people in the United States can send their clothes to steam laundries and less than 10 per cent have any household help. These two facts emphasize the importance of the job of washing as a household task.

We all like to put on clean clothes several times a week, but few realize the amount of labor that can be saved by providing proper equipment for cleaning the clothes. There is probably no other machine that can be added to the farm equipment that will save as much labor during the year as a washing machine. Mangles and special irons are also great labor savers.

In a study made by a Home Adviser of the types of laundry equipment in use in one of the progressive middle western counties, it was found that one-third of the women were using wash boards, one-half hand power, and only one-sixth power machines.

It was found in this survey that the women who washed with a wash board required, on the average, five hours to do the job of washing, while those with hand power washing machines required three hours, and those who used the power machines, one and one-half hours, or a saving of three and one-half hours labor per week.

Washing with a wash board is a type of work no woman should be expected to do when a washing machine can be operated at such a great saving and at so little expense. The saving in labor for one year, if a reasonable value is put on the woman's time, will put a washing machine in any home. If a woman's time is worth 35 cents per hour, there would be a saving of $63.70 per year. As far as saving time is concerned, this would amount to 182 hours a year, or 22¾ days of eight hours each.

On a few farms it is the custom for the men to assist with the weekly washing. I know of one Iowa farmer who always lets the hired man devote one-half day each week to the job of washing. This results in the hired man devoting 52 half days or 26 whole days to this work, which might be classed as unproductive labor. When this work is done by a man who is taken from the field, the importance of this type of work is realized and a real money value can be put on doing the job. If a proper money value was put on the farm woman's work, no farmer would hesitate to provide proper laundry equipment and other equipment needed in the home.

Proper laundry equipment for the home is not only important from an economic standpoint, but is also important because the clothes are laundered under sanitary conditions. It is not always safe from a health standpoint to send clothes out to a washer woman. When clothes must be sent away to be laundered, one should be sure of the place they are sent.

Plenty of water under pressure is always a labor saver on washday. Stationary tubs with a bottom drain are a great convenience. Where a bottom drain is not provided, a rubber tube to be used as a siphon will save some labor in emptying the tubs. When movable tubs are used, be sure a bench of proper height is provided. Sufficient and convenient clothes lines and racks for drying will save much time. A well supported ironing board, conveniently placed with iron holders should be found in every laundry. Where electricity is available the electric iron and mangle are needed to make the laundry equipment complete.

In selecting a washing machine, there are several points to keep in mind. In the first place, the standing of the manufacturer and their ability to give service should be considered. The most perfect machine may not be the best to buy unless it is manufactured by a good reliable company. There are six points to remember about the machine itself. First, it should wash the clothes well, that is, it should be efficient. Second, it should be safe—the danger of operating the machine should be reduced to a minimum; all moving parts should be enclosed; there should be a safety release on the wringer; and there should be no chance to tear the clothes. Third, the machine should be simple to operate and simple to maintain. Fourth, the machine should be strong and well built so as to give a great many years of service. Fifth, the machine should be accessible and easy to repair. Sixth, the machine should be sanitary, easily drained and easily cleaned.

There is considerable truth in the statement that no mistake will be made in the purchase of a washing machine whatever make is selected. All washing machines have good talking points. The most important, however, are: They save time and reduce the drudgery of wash day, thereby safeguarding the health of the mother in the home. Every washing machine lessens woman's work and promotes better satisfied living conditions.

New Peach Found for New Jersey Growers

A SUBSTITUTE for the Carman peach has recently been developed by the New Jersey Agricultural Experiment Station. This new peach, known as Pioneer, resulted from a seedling of Belle crossed with Greensboro, grown at New Brunswick, N. J.

The fruit is white fleshed, semi-cling, almost freestone, and ripens several days before Carman. It is oval like Belle and develops a bright red color, which is far more attractive than that of Carman.

The Pioneer tree is equal to Carman in vigor, hardiness and productiveness, and the fruit is superior to it in quality, shape and general appearance.

Distribution of trees is in charge of the Experiment Station at New Brunswick. New Jersey growers may get full information from county agricultural agents or by writing to Prof. A. J. Farley, State College of Agriculture, New Brunswick, N. J.

Merchandising the Michigan Apple

(Continued from page 29)

ples. The crop should be sold gradually as demand and price warrant. Adequate storage means simply a provision for withdrawing the surplus from the market at harvest and distributing it to the trade throughout the season when the consumer is actually demanding it. Its influence is to stabilize the market and remove from the business much of the uncertainty that now attends it.

These statements should not be interpreted as meaning that less attention need be given to questions of variety standardization, grading, packing, or improvement of present marketing machinery. As a matter of fact, everything possible should be done to effect improvement in all of these directions.

Are We Eating Enough Apples?

Incidental to the collection of the figures that have been presented, some interesting sidelights have been thrown on certain phases of the apple business. Perhaps the most important of these is that on the whole people are not eating very many apples. For instance, an official in one chain grocery store organization that operates about 500 retail establishments in the Detroit area stated that their average daily output of apples is between 600 and 700 bushels. Now and then, when they feature apples in their windows, the output rises to 900 or 950 bushels per day. This is an average of only a bushel and a quarter per day per store, or a bushel and three-quarters to two bushels per day two or three times per month when they feature apples. When one stops to think of the number of people who daily trade at the average chain grocery, who buy most of their supplies there, and of the average total daily turnover of one of these stores, it doesn't look as though the nation's digestion would be upset by the quantity of apples we consume. The Lansing restaurant, to which reference has already been made, uses 25 bushels of apples per month. With these it bakes its own apple pies and makes its apple sauce and baked apples. It serves on an average of 700 meals per day, 4900 per week, 21,000 per month. The 25 bushels will average 150 fruits per bushel. At that rate 3750 apples are used per month, one for each six meals that are served. The average person is not getting his "apple a day."

Who Is Going to Bring About Increased Consumption?

Here is a real problem for the producer, or rather the producers' organization. There is room for a doubling, a quadrupling of consumption. Obviously, neither the wholesaler or the retailer will undertake the task. It is just as profitable for them to sell oranges or bananas or canned pineapples. As a matter of fact, it is their business to sell anything for which there is a demand. Their job is to satisfy demands, not create them. The producer, and the producer alone, is interested in increasing demand. If it is done at all, he must do it. How? That is not a question to be answered here, but the point is emphasized that it is one of the most important, if not the most important, marketing problems facing the fruit growers and their organizations. Incidentally, it may be pointed out that it is neither new or unsolvable. The place of the orange and grapefruit on the menu cards of the country is sufficient evidence on this point. Such organizations as the California Fruit Growers' Exchange are popularly thought of as being successful because they fix prices, prevent competition, obtain favorable freight rates and prompt service and because they employ skilled salesmen. These may all be functions of the organizations in question, but they are not the principal functions. They succeed because they realize that their big job is to merchandise their product, which means educating the consumer to demand more of it and then seeing to it that that demand is met by a continuous supply of standard quality at moderate prices.

In the meantime, much can be done to deal effectively with the apple growers' marketing problem and it can be done by the growers themselves, either acting individually or together through their organizations. The day has gone by when the apple was regarded as more or less of a luxury, to be bought at harvest, placed in the cellar and consumed before New Year's. It has come to be a staple article of food, not wanted in surplus at harvest, but in demand every day in the year, just like sugar or coffee or bread. The retailer, who knows all this, merchandises it accordingly. These are conditions made possible by modern methods of transportation, storage and distribution of food products of many kinds. They are conditions that cannot easily be changed. It is the part of wisdom to adjust our business to them.

Fruit Received

DURING the month we have received considerable fruit, among which was a box of very fine persimmons from Mrs. J. E. Fitzgerald of Texas. Our readers are familiar with Mrs. Fitzgerald, as she has told them heretofore how to grow the Japanese persimmon. These Japanese persimmons which Mrs. Fitzgerald sent us were large, highly colored and upon ripening showed a fine quality.

There is an increasing interest in the growing of Japanese persimmons. California is increasing its acreage very rapidly and the acreage is also growing in Texas, the Gulf states and Florida. It is a fruit that is bound to become more popular when people become familiar with it.

We also received from Lloyd Stark a wonderful specimen of the Golden Delicious apple. This was part of a carload from the Wenatchee district. Most of the boxes contained only 36 apples, which goes to show that the Golden Delicious can be grown about as large as desired. Some people have felt that this apple would naturally be small. It is hard to understand where they got such an idea, however, as most of the Golden Delicious we have examined have been good sized apples. These from Wenatchee were elongated, golden yellow, with a slight blush, and looked as though they were made of wax. They had the typical aroma of the Golden Delicious.

Program of Northern Illinois Horticultural Society Meeting, Moline

Tuesday Morning, December 4.

The Farm Orchard—A Menace to Commercial Orchards—R. T. Glassco, Janesville, Wis.

Tuesday Afternoon.

Advertising and Preparing Vegetables for Market—Prof. C. B. Sayre, University of Illinois.

Grape Culture—Emil J. Baxter, Nauvoo.

Commercial Orchards for Northern Illinois—J. L. Hartwell, Dixon.

Tuesday Evening.

Observation on Fruit Growing Conditions Resulting from Recently Visiting Orchards in 20 Fruit Growing States—Paul Stark, Louisiana, Mo.

The Lure of the Garden—Mrs. Emma Hey, Dixon.

Wednesday Morning, December 5.

A Bird's-eye View of Horticulture in the Upper Mississippi Valley—G. L. Smith, Moline.

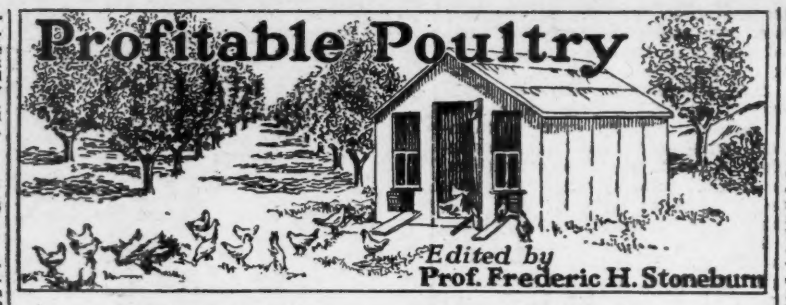
Windbreaks for the Farm—Louis Bryant, Princeton.

Wednesday Afternoon.

Recent Results in Spraying and Fertilizing Small Fruits—Dr. A. S. Colby, University of Illinois.

Address—John A. Garnier, Newton.

Growing Pickles and Onions—August Geweke, Des Plaines.



Consider the Hen!

FRUIT growing and poultry keeping are as logical a combination as buckwheat cakes and sausage. Either is good alone but the two, together, are the "real thing."

As a straight business proposition, as a means of increasing the cash income, growers of fruit may well give some consideration to poultry. It is often good business insurance to have a second, though minor, cash crop to carry things along if the main crop fails or sells at such low prices that profits are wiped out. And for this purpose, the fruit farmer will find the chicken crop ideal.

Perhaps the most sensational development in American agriculture during the last decade is the extent to which the once despised hen has leaped to the front. During recent years the value of our farm poultry crop has exceeded that of all field crops, excepting corn, cotton and hay. It is 50 per cent greater than our wheat crop, though the latter is so important that the recent trouble of our wheat growers has affected all lines of business and caused a great stir in national political circles.

The rapid increase in poultry production is shown by official statistics. According to the 1910 census, the American farm hen produced nearly six hundred millions of dollars. Ten years later the value of her yearly output exceeded a billion dollars. War prices may partially explain this great jump in values, but I believe the poultry crop will be worth a billion dollars this year because of the rapid increase in our flocks of poultry. So poultry husbandry is really "big business."

Not only have our flocks increased in size but they have also improved in efficiency. The mongrel birds of recent years have been replaced by good stock, and modern methods of feeding, housing, culling and general management have been widely adopted. Thus we have stepped-up the industry all along the line. More birds—more market products per bird.

In view of all these things, anyone contemplating taking up this industry in a serious way may naturally inquire as to the future of the business. Is there danger of over-production, the terror of the producer of perishable foodstuffs? Will the business, though profitable now, become unprofitable in a few years owing to the severe competition?

Frankly, it is conceivable that this may happen. It has happened at times in practically all lines. Personally, I believe this danger is possible rather than probable. Table poultry and eggs are as staple as beef, pork and mutton, as milk, butter and cheese. The world must eat and there is a steady increase in the number of consumers. Further, there is an astonishing increase in the per capita demand for poultry products and this increase in consumption bids fair to keep pace with the increase in production.

To anyone taking up poultry husbandry in a serious way, however, safety lies in adopting the most efficient methods of production and marketing. Those who produce at lowest cost and sell to best advantage can continue in the business when the inefficient are forced out; will make the largest profits during the good times of the industry. And the successful fruit grower is in a particularly favorable position to become an efficient poultryman because of the reasons given below.

The poultryman is not only a farmer but, in a sense, is a manufacturer. He may regard his poultry in the light of machines which convert raw material—feed—into finished products—meat and eggs. He must provide a manufacturing plant, labor and raw material. His investment carries an interest charge which should be added to his production costs, and in the case of the exclusive poultry farm, the interest on the investment in land, plus taxes, makes a considerable item.

The owner of a fruit farm avoids the greater part of this investment. He already has the land and his investment charge and taxes go on from year to year even if he grows nothing but fruit. The poultry can use this land without injury, rather with benefit, to the main crop. In order to add a poultry department to his business, he has merely to provide the necessary buildings and stock.

Then take the item of labor. In most agricultural enterprises, this is a troublesome question because of the unequal distribution of labor throughout the year. There are certain months when a great deal of work must be done and others when there is comparatively little. The big problem is to provide productive employment during the otherwise idle seasons. Fruit farming is no exception to this rule.

Now by putting on a relatively large flock of fowls, the fruitman can provide employment for himself, his family and hired help during that part of the year when the trees require comparatively little attention. And through the use of modern poultry equipment and methods of management the poultry work can be so simplified that the flock will require but little detailed attention during the late summer and early fall, thus leaving the workers free to devote themselves to the gathering and marketing of the fruit crop.

There is another business point which should not be overlooked. Fruit growers receive the major part of their year's income during a comparatively brief period. There are many months during which little or no cash comes in. But a well-managed poultry flock will yield a cash income practically every week in the year.

The hens will do more—they will actually benefit the fruit crop by improving the fertility of the soil and fighting insect pests which cause so much trouble and loss.

Take this matter of soil fertility. It is common knowledge that fruit trees thrive in poultry runs. They make rapid growth and bear abundantly. Where the land is heavily stocked with poultry, the new growth is often excessive. This is due to the effect of the poultry manure, perhaps the most valuable of all farm-produced fertilizers.

It is officially estimated that the fertilizing elements contained in one year's droppings of an adult hen, figured at the average price of commercial fertilizers, have a value of approximately 30 cents. (Maine Agr. Exp. Station.) Thus, a flock of 1000 birds will provide fertilizer having an actual market value of $300 and cut down the commercial fertilizer expenditure by that amount.

A portion of this material will be deposited on the ground when the

birds are at liberty, but the night droppings throughout the year and the day droppings during the winter months can all be collected and applied where most needed. These will amount to at least 40 lbs. per bird, or a ton for every 50 birds. And every ton will do a heap of good if intelligently used. The more hens the more fruit!

Chickens of all ages are great destroyers of insects, the natural enemy of the fruit grower. A flock of growing chickens or foraging hens in the orchard, vineyard or patches of berry bushes, will wage constant and effective warfare on insect life of all kinds. Practically all insects come down to the ground at some period of their lives and the number of them that a bunch of chickens will capture is beyond accurate calculation. The good insect is the one that is in a chicken's crop.

So I feel that every fruit grower may well consider the hen as being worthy of his serious attention. She may serve as an anchor to windward during stormy times in the fruit line—an improver and protector of the fruit crop—a producer of a year-round cash income—an employer of unproductive labor during the off seasons. Surely, all these things are well worth while.

Crop Worth $80,000

by M. B. Cummings

WHAT is properly called a bumper crop of apples is reported this year of the Northern Orchard Co., which has its plantings in Peru, N. Y. This extensive orchard now embraces 120 acres in apples, 80 acres of which are bearing this year. William Tyndall, a business man and familiar with real estate business, located at Keesville, N. Y., stated, "Tree for tree, this is the most wonderful orchard anywhere in this part of the country." Mr. Tyndall further stated, "In some portions of the orchard, the returns this year will amount to fully $1000 per acre."

The Northern Orchard Co., owned largely by John M. Stevens of Orwell, N. Y., A. S. Avery of Peru, N. Y., H. L. Porter of Crown Point and W. W. Brown of New York City, began its plantings 17 years ago when it set out approximately 80 acres in a modern way and to a splendid variety of apples. Forty more acres have been recently set out. The varieties are McIntosh, Fameuse, Tolman, Winter Banana and Red Delicious.

The orchard is located on slightly elevated ground, a clayey or gravelly loam soil, and in recent years the trees have been grown in an alfalfa sod. The individual trees for the most part are placed 27 by 42 ft. apart. The alfalfa croppage has been found very satisfactory for orchard purposes in this district. Three, four and sometimes five cuttings are made during a single season. Even this last summer, when it was so dry, at least three cuttings were made. Fully nine-tenths of the crop, however, is left on the ground and used as a mulch underneath the trees. A. S. Avery, superintendent and partial owner, states that the chief essential in growing alfalfa in an orchard is thorough preparation of the soil. The land is plowed in the spring, again at midsummer and then in the early fall preceding harrowing and seeding. In some seasons when the growth of alfalfa is extra good a portion of it can be harvested as hay, but as a rule it is worth more if left in the orchard. The land has been thoroughly limed and once in three years receives a generous application of manure.

The picking, packing and marketing of the fruits in this orchard offer an interesting study. About 30 workers are employed at present, and are organized approximately as follows: About 20 are classed as pickers, about eight as sorters and graders, and two men as teamsters. The fruit this year is of an exceptional quality, requiring only a small amount of grading and sorting previous to marketing. Most of the apples will sell for $10 a barrel, although the choicest probably will go for $14 and $15. Even second and some of the third grades will sell for not less than $5. Most of the fruit will go to Troy, N. Y., for temporary storage, although some will go to New York City, and other portions will go directly to Montreal, despite the duty of 90 cents a barrel to cross the border.

The brand on the end of the barrel reads as follows: New York Standard Grade Fancy McIntosh. Minimum Size, 2½ in., Minimum Volume, 3 bu. Northern Orchard Co., Peru, N. Y.

At the present time it is a remarkable thing to see an orchard in this part of the country producing as much as 8000 bbls., but when the extensive orchards at Bennington, Middletown Springs, Castleton, Westminster, Grand Isle and Brattleboro come into full play, such crops as are reported herewith will not be an uncommon thing here in Vermont.

Recent visitors at this orchard were Prof. M. B. Cummings of the University of Vermont, W. T. Abell of Newport, County Agricultural Agent for Orleans, A. O. Ferguson and George L. Pease of Burlington.

WESTERN Nut Growers' Ass'n recently held their annual meeting at Salem, Ore., on December 5 and 6. This organization has some of the best horticultural meetings in America. There is generally a large attendance and much enthusiasm displayed. The program this year was very interesting and was as follows:

Opening Address—President Ben F. Dorris, Springfield, Ore.; Status of Walnut Industry of China—C. A. Reed, United States Department of Agriculture, Washington, D. C.; Insects of Walnuts and Filberts—A. L. Lovett, Entomology Department, Oregon Agricultural College; Costs of Producing and Maintaining a Walnut Orchard—Fred Groner, Hillsboro, Ore.; Open Discussion on Walnut Questions—Led by Charles A. Trunk, Dundee, Ore.; Propagation of Filberts and Walnuts—D. H. McGogy, McMinnville, Ore.; Root Stocks for Filberts—R. H. Turk, Washougal, Wash.; Open Discussion of Filbert Problems—Led by A. M. Gray, Milwaukie, Ore.; Record of a Filbert Orchard—H. A. Kruse, Sherwood, Ore.; Drying and Storage of Filberts—H. Hartman, Horticultural Department, Oregon Agricultural College; Results of Experimental Work on Filberts, Walnuts and Chestnuts—C. E. Schuster, Horticultural Department, Oregon Agricultural College.

No. 1810. Blouses are Worn Everywhere.
Cut in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 1½ yards of 40-inch material with 4¾ yards of binding.

No. 1911. Men's and Boys' Shirt.
Cut in sizes 12½, 13, 13½, 14, 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½, and 19 inches neck measure. Size 15½ requires 3½ yards of 36-inch material.

No. 1916. Attractive Jacquette Blouse.
Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 2⅛ yards of 36-inch material with 1 yard of 22-inch contrasting.

No. 1678. Bloomer Dress.
Cut in sizes 2, 4, 6, 8 and 10 years. Size 8 requires 3½ yards of 36-inch material with 2 yards of binding.

No. 1883 Practical Apron.
Cut in sizes 36, 40 and 44 inches bust measure. Size 36 requires 1⅛ yards of 36-inch dark material with 1¼ yards of 27-inch figured material and 3¼ yards of binding.

No. 1913. Costume Slip.
Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 2⅝ yards of 40-inch material.

No. 1919. Two-Material School Frock.
Cut in sizes 8, 10, 12 and 14 years. Size 8 requires 1⅛ yards of 40-inch material with 1½ yards of 36-inch contrasting.

No. 1691. Attractive Overblouse.
Cut in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 1½ yards of 36-inch material. The Embroidery Pattern No. 665 costs 12c extra.

No. 1917. Skirt with or without Camisole.
Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3¾ yards of 40-inch material.

No. 1851. One-Piece Dress.
Cut in sizes 16 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3⅝ yards of 40-inch material, with 3¼ yards of binding.

No. 1882.
The diagram explains the simple construction of this model. Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3¼ yards 40-inch material.

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The Long or High Renewal System of Pruning

(*Continued from page 4*)

ing is one of the biggest reasons why the Western apple tree is taller in proportion to its size than the Eastern tree. No heading back and just enough thinning out to give the proper distribution and balance of secondary branching is the kind of pruning which will give the largest, strongest and earliest bearing tree. This same kind of a scaffold branch, with its secondary branches all on its outer side and the fruit hangers and spurs equally distributed over the scaffold and secondary branches, will bring about a greater spread with the first full crops than can be secured by any other agency. The secondary branches should be distributed along the outer side of the scaffold, the lowest ones not closer than 16 or 18 in. to the union of the scaffold and trunk of the tree. They should be distributed a little wider apart as the distance from the trunk increases. This gives a branch with its lowest part its heaviest, densest part and the highest part the most sparse. Four to six such branches will produce the same kind of a tree having its top very sparse and its lower parts more dense. Such a tree will have a good fruiting system from the base of its branches almost to its tip, all fairly well exposed to the light.

Pruning the tree or the scaffold branches after the weight of the fruit has started them on their outward and downward spread is of as much importance as pruning the young tree in its formation period. As the branch is gradually pulled by its succeeding crops from its original more or less vertical position towards an arched and more or less drooping position, the pruning should be speeded up. Severe thinning out should be practiced upon the branch which has already approached or reached the desired spread. This thinning out should be most severe at the extreme end of the branch, lightening up as the base of it is approached.

Can Keep Breakage Small.

The breakage will be extremely small in trees handled this way. Varieties having brittle wood, such as the Grimes Golden, will suffer more or less, but even here the loss is negligible when the ideal low, spreading nature of the remaining branches is considered. In no case have I heard a grower complain of breakage where the system of pruning has been reasonably followed. Considerable breakage always follows a sudden change from the old type of severe pruning to practically no pruning. This is especially true when the former pruning has formed a large number of competing, more or less pole-like branches, with their many equally balanced crotches instead of the four to six well-formed branches with their central leads and well distributed secondary branches.

A System of Renewal Necessary.

A system of renewal is necessary where this type of pruning is followed. The branches will soon have their tips drooping to the ground. Fortunately, a branch bending under its load of fruit will have a restricted sap flow, resulting in an extra heavy wood growth on its upper side, giving it extra strength. A number of shoots or sucker growth will also result. These suckers are the parts to be used for renewing the branch. Care should be taken in their selection, leaving only a few of the well located ones. The first one should be selected from 4 to 6 ft. from the union of the branch and trunk and others 4 to 6 ft. apart along the top of the scaffold branch. None should be left upon the secondary branches as only the four to six main branches should be renewed. These suckers thus selected should be built after the same plan as the original scaffold, keeping one central lead with a limited number of secondary branches on its outer side, with fruit hangers and spurs distributed over all sides of the scaffold and secondary branches. As the branch settles down and lower under its annual crops these new upright parts make ideal places to cut to. As they increase in size and bear their first crops, they will go through the same process of spreading renewal and elimination. The original branch will continue to settle until it has been entirely cut away back to the innermost renewal sucker. This process of elimination, however, is very gradual and the functions of the tree are never upset by severe pruning. It gives a continuous supply of new bearing wood. The process of spreading with its accompanied restricted sap flow keeps the innermost fruit hangers and spurs invigorated and well lighted. The tree is never weakened by the necessary pruning cuts as the remaining parts are always pulling towards the wound instead of away from it.

Has Doubled Orchard Yields.

Orchards pruned after this system have more than doubled their yields during the past three years. The pruning and other orchard practices are simplified and the fruit is much better colored. A 20-acre Winesap orchard in the Walla Walla Valley, near Freewater, Ore., produced 14,000 packed boxes of large, well-colored apples this year after three years of this type of pruning. Previous to this treatment it had never produced over 7000 boxes. A block of Spitzenburgs in Hood River, pruned after this fashion, packed out over 700 boxes per acre last year and carried another bumper crop again this year. The highest yielding pear orchard in Sam's Valley has not received any other kind of pruning for a number of years. Young orchards of all kinds are coming into bearing from one to three years earlier than orchards pruned the old way. The trees are larger and stronger and continue to make just as much, or more, growth than those pruned as of yore.

Wild Hazel Nuts

WHILE IN Kentucky we were surprised to see how large the native wild hazelnut grew. Some of them were as large as the commercial Barcelona filberts. Possibly some man some day will select some of these fine wild hazels and propagate them. They certainly have a great future. If they will produce abundantly nuts of as good quality and size as we recently saw in Kentucky, they would be a valuable acquisition to our list of commercial nuts.

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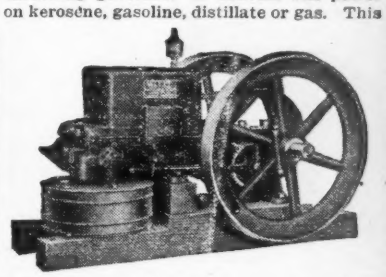

new WITTE ENGINE has revolutionized power on the farm as it handles practically every job with ease at a fraction of the cost of hired help. Easily moved from one job to another, it is trouble-proof and so simple that a boy can operate it.

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Living for Others

by John H. Griffith

THE BIBLE conveys to us this one truthful fact that we come into this world to live our natural lifetime, not to ourselves, but for others, and by that we conclude that we are creatures not intended to be selfish and that our lives and efforts should bless the lives of others as well as our own.

When we plant a fruit or shade tree we are doing a deed that eventually shall bless the lives of others after we have gone. My father was a renter most of his farming days, and on most every place he lived he set out fruit and shade trees; on one place where he lived for nearly 14 years, he reaped the blessings of a fine peach orchard he had set out.

The fruit trees have disappeared, but the sugar maple shade trees have grown to large trees, and though he has been gone these 28 years, these trees are living monuments to his efforts and are blessing the lives of those who live in this day and time.

Now and then we meet people who say, "You don't find me setting out fruit or shade trees on some one else's place, unless they pay me for the trees and my labor. What good will they do me since I may stay here only a short time?"

When I was a small boy I well remember a beautiful apple orchard near where we lived. There were many kinds of apples from early to late, and it was a blessing to everyone to eat of those fine apples, the trees of which were planted out long before I was born.

Near my present home is an old apple orchard, the remaining trees of which must be 75 or 80 years old, and though I am nearly 54, yet every season I enjoy the fine old apples from these trees planted out so long ago.

It has been remarked that one day an old man was seen setting out fruit trees. Someone asked him what was the use of him setting out trees as old as he was, that he would not live to see much good from them. Says he, "Someone planted fruit trees for me to enjoy the fruit of them before I was born." What a grand, noble, unselfish principle in the heart of man with the thought of the consideration of others as well as of self. This world would be a more blessed place in which to live if everyone possessed this unselfish ideal of life.

I live on another man's place and soon after I came on it, nearly eight years ago, I commenced to set out strawberry, blackberry, raspberry and most every kind of fruit tree that is good and profitable to grow in these parts. The small fruits and berries soon paid me back for my extra work and activities, and if I stay on the place long enough for the apple and cherry trees to reach a good size bearing age, my family will enjoy these also; if not, someone else will, and when I set them out I had this thought in mind.

"Their works do follow them," says the inspired word, and while this may apply to one's spiritual activities, yet it can be applied to one's activity in another sense, and one is that of planting out fruit and other kinds of trees that will eventually be a blessing to mankind when one has passed on to the other side.

Some time next summer I plan to visit the old homestead of my grandfather, where once upon a time was the finest apple orchard in that part of Delaware and where grew the best fruit of 50 years ago, some of the varieties of which I still remember, and I shall want to tell you readers of the "American Fruit Grower Magazine" of this anticipated visit to scenes of days long gone by.

The Danger of Individual Tillage for Fruit Trees

by Robert Sparks Walker

FIFTEEN years ago I cleared 10 acres of land for a small apple orchard. Farm labor was so scarce that I was compelled to offer the timber on my place to the neighborhood farmers in order to get the land cleared and ready for planting. For miles the farmers came and it was not long before there was not the vestige of a tree on the property. At that time I knew that it was best to have new ground cultivated at least a year before setting it out in trees, but I took a chance and had the apple trees set out among the stumps, even before such a thing as a plow had been stuck into the field. For 3 years, I had cultivation given each individual tree with a mattock. The soil was kept stirred for almost 4 ft. around each newly set tree. Careful pruning was given, and all the sprouts and weeds were kept cut in the intervening spaces. It was simply an emergency practice during a period of a scarcity of labor, but the fourth year I succeeded in getting the new ground plowed. In the meanwhile, the trees made an excellent growth, and I think I have never seen a more promising young orchard than that orchard which was set among the stumps.

The fourth year a traveling man who had once lived on the farm and who, like 999 out of every thousand of the rest of the people, cherished hopes of some day going back to the farm to live, became much interested in the young orchard and while I was bringing it to maturity for my own use, yet his offer was so tempting that I let him have it.

He was out on the road the most of the time, and unfortunately his duties carried him over 10 states, including Texas. It is very difficult for any man to make a success of an orchard whose work takes him so far away that he cannot at least visit it frequently and see that the work is being properly carried on. The man who was left in charge of the orchard kept the trees properly pruned, but did not keep up the practice of ploughing between the rows, or keeping the grass and weeds cut back; but he did give the trees the same old individual cultivation which I had practiced so long. Inside of 2 years, the sumac and sedge grass had conquered the orchard and the broom sedge was fully as high as a man's shoulder.

It was nothing more than one of those very insignificant cigarette stubs that a hunter threw into the grass in the middle of December. Unfortunately, the weather had been dry for 2 weeks preceding, so on the following morning the man who owned the orchard had nothing left but a piece of burnt over ground, without a single apple tree left alive. According to his method of reckoning the value of an apple tree, his loss was something like $5 per tree. Barring the danger from fire, if the owner had kept up the practice of cutting the grass between the rows, and kept up his constant tillage of the individual tree, I think that he would have succeeded in establishing a first class orchard without even the employment of a plow or cultivator between the rows, although he might have well increased the diameter of the cultivated area around each tree as they grew older.

Winter Meetings

MASSACHUSETTS Fruit Growers' Ass'n, in connection with Union Agricultural meeting, Worcester, Mass., January 16 and 17, 1924.

New York State Horticultural Society, Rochester, N. Y., January 15 to 18, 1924. Roy P. McPherson, secretary, Le Roy.

Eastern meeting of the New York State Horticultural Society, Poughkeepsie, N. Y., February 20 to 22, 1924. Roy P. McPherson, secretary, Le Roy.

Ohio State Horticultural Society, February 4 to 6, 1924. R. B. Cruickshank, secretary, Columbus.

Thirty-fifth annual meeting of the South Dakota Horticultural Society, Sioux Falls, S. D., January 8 to 10, 1924. Dr. N. E. Hansen, secretary, Brookings.

Union Agricultural meeting, Worcester, Mass., January 15 to 18, 1924.

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TOBACCO—SELECT THREE-YEAR-OLD LEAF. Nature cured. 3 lbs. chewing, $1.00; 4 lbs. smoking, $1.00; 7 lbs., No. 2, smoking, $1.00. Pay for tobacco and postage when received. Farmers' Grange, Hawesville, Ky.

NATURAL LEAF TOBACCO—CHEWING, 5 LBS., $1.75; 10 lbs., $3.00. Smoking, 5 lbs., $1.25; 10 lbs., $2.00. Pay when received, pipe and recipe free. Farmers Tobacco Union, B27, Paducah, Ky.

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AUTOMOBILE OWNERS, GARAGEMEN, MEchanics, send for free copy of America's popular motor magazine. Contains helpful, money-saving articles on repairing, overhauling, ignition, carburetors, batteries, etc. Automobile Digest, 613 Butler Bldg., Cincinnati.

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How Bees Aid Fruit Growers

by H. F. Wilson

MANY beekeepers in various sections of the United States have been reporting heavy losses to their bees due to the spraying with poison of fruit trees in full bloom. Should this continue it seems quite likely that keeping bees in these sections will have to be discontinued. This situation is a serious one not only for the beekeeper but for the fruit grower as well.

Are bees helpful in producing perfect fruit? Many authorities think so. There can be but little question that every living thing was created for some purpose although the reason is not always apparent. In the case of the honey bee, we might suppose that it was created to produce honey. As a matter of fact, the honey produced is of little importance compared with the good done in the cross fertilization of plants of all kinds. Some plants do not need cross fertilization to survive, but most of them do. The majority of those plants that are able to survive without cross fertilization are greatly improved by exchanges of pollen within the variety.

The wind is responsible for the distribution of more or less pollen, but tests made by a number of investigators show that the wind is not nearly so efficient or thorough as are insects.

The Interrelationship of Plants and Insects.

For those who may doubt the need of insects for cross fertilization of plants, let me point out just one or two facts. Insects are attracted to blossoms by just one desire and that is to secure the food which nature has purposely provided. Remove the nectar and pollen from a flower and you will find that neither bees or other insects will come near it. Furthermore, the nectar appears to be the most important. Let plants blossom without secreting nectar and you will find very few insects on them. If these same blossoms suddenly begin to secrete nectar you will find them covered with insects of various kinds. The nectar cups are nearly always found at the base and on the inside of the flower. The nectar is apparently not in any way connected with the act of fertilization and can serve only one purpose, that of attracting insects. The latter crawling down into the flower to reach the nectar become dusted with pollen, which, on their visit to the next flower, comes in contact with the female part of the flower and so nature accomplishes its purpose. In this way a continual interchange of fertilizing elements is secured. Plants which do not require cross fertilization in this manner do not have nectar cups and do not secrete nectar. We are then forced to conclude that the Creator arranged this plan with a very definite purpose in view.

Plant life is believed to have been created before animal life, but the development of plant life and the formation of many of our present-day forms has been due to a wide interchange of pollen by insects. In the working out of this scheme, the honey bee, bumble bee and many species of solitary bees have been molded into specialized insects whose food is limited to nectar and pollen of flowers. The structure of their mouth parts and even the digestive tracts are such that they cannot otherwise survive. In securing this food they unknowingly render a service to the flowers by the distribution of pollen.

Now let us see how perfectly nature has contrived this arrangement for the benefit of the plants. Bees make no distinction between varieties of the same plant, going from one variety of apple to another and so on. But a bee which has started working on apple blossoms does not pass back and forth from apples to plums, grapes, pears, etc. In this way pure unmixed pollen is assured for each blossom. Different bees from the same hive, however, may visit other kinds of plants at the same time, but they in turn do not visit but one species of plant at a time.

The fruit grower should be very careful then to not upset this scheme of Nature's for he is certain to lose heavily if insects are eliminated from his orchard. If all plants came into bloom at the same time there would not be a sufficient number of insects to fertilize them and undoubtedly the insects would visit only the most fragrant and more desirable species. Also the insects would die out in one or two seasons because of a lack of food. To maintain a balance, Nature has so constructed the plants that they come into blossom at different times. Early in the spring we have the maples, elms, oaks and many other forest trees. Then we have the spring flowers of which the dandelion is most important to the beekeeper. Upon these early blossoms all insects increase in numbers so that they are more plentiful at the time of fruit bloom. At the time when fruit trees are in blossom, practically no other plants are in flower. In this way nature has arranged that these plants shall be assured of the complete attention of the insects during the period for fertilization. After the fruit bloom, the next important plants which need attention are the clovers and alfalfa. At the time when these bloom, the number of bees in each colony has increased many fold, which is in direct proportion to the many flowers necessary to be fertilized to produce a maximum crop of seed. Later, other plants of various species produce their blossoms, and so through the entire growing season there is a continued need of insects for fertilization purposes.

Spraying Plants in Bloom.

Modern methods for producing fancy fruits include a spray program to destroy the insects and plant diseases, which injure our fruits and make them unmarketable. This program includes the use of poisons to be put on the plants at certain definite times in order to catch injurious insects at their most vulnerable point. Theoretically, the time for application is just before or just after the blooming period, although in some sections local conditions require more or less of the spray to be applied while the trees are still in bloom. Just how much of this is necessary is an open question and in many cases growers make applications of poison spray at that time as a matter of convenience rather than necessity. Since dusting has come into use, the situation is even worse so far as the destruction of pollen eating insects is concerned, and many beekeepers in fruit and cotton growing regions have suffered severe losses. The dust poisons not only fall on the plants meant to be sprayed but on all the surrounding plants as well. Just what effect this may have had on the setting of fruit probably cannot be determined.

The fruit grower in working out his spray program should then consider that he himself is quite likely to suffer from ill-advised spraying if the millions of insects which normally work for him in the orchard are destroyed. Every spray program should be worked out so that it will give the greatest efficiency in control of injurious insects, at the same time permitting the preservation of beneficial insects, especially the honey bee.

Do Bees Injure Fruit?

Positively not. It is impossible for a bee to cut any smooth surface which it cannot soften by moistening with its tongue. Any fruit with unbroken skin may be covered with bees and not a single one will be able to puncture the skin. On the other hand if a peach, apple, plum or grape has a small break in the skin, due to some insect or disease, the bees will endeavor to suck out the juices of the fruit. When bees are found feeding on fruits, this is what has happened.

Classified Advertising

HELP WANTED

MANAGER WANTED FOR ORCHARD OF 10,000 twenty-two-year-old apple trees located in southern Ohio near excellent local markets. Must be Horticultural Graduate and have had at least five years' experience in Orchard Management including spraying, pruning, packing and selling. Must be willing to work as well as direct. All modern equipment including $40,000.00 concrete packing house and cold storage. Salary and bonus amounting to from $2,500.00 to $4,000.00 per year, according to size and quality of crop. Five room farm cottage and garden rent free. Prefer man willing to buy part interest in company, but not compulsory. Liberal proposition on own terms to right man. References required. Address C. M. Davidson, 116 Central Avenue, Dayton, Ohio.

ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 65, willing to accept Government Positions, $117-250, traveling or stationary, write Mr. Ozment, 259, St. Louis, Mo., immediately.

$100 TO $250 MONTH. MEN-WOMEN, 18 UP, wanted. U. S. Government steady positions. Short hours. Pleasant work. Paid vacation. List positions free. Write immediately, urgent. Franklin Institute, Dept. F-105, Rochester, N. Y.

MISCELLANEOUS

FREE BOOK — ELIJAH COMING BEFORE Christ. Megiddo Association, Rochester, N. Y.

CASH PAID FOR UNITED STATES AND FOReign stamps. Wheeler, Bicknell, Calif.

HELP WANTED—FEMALE

EARN MONEY AT HOME DURING SPARE TIME painting lamp shades, pillow tops for us. No canvassing. Easy and interesting work. Experience unnecessary. Nileart Company, 2268, Fort Wayne, Ind.

WANTED — GIRLS-WOMEN, 16 UP. LEARN gown making, $35 week. Many spring openings. Learn while earning. Sample lessons free. Write immediately. Franklin Institute, Dept. F-548, Rochester, N. Y.

AGENTS WANTED

EARN $110 TO $250 MONTHLY, EXPENSES paid as Railway Traffic Inspector. Position guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for Free Booklet G-100. Stand. Business Training Inst., Buffalo, N. Y.

WE WILL PAY YOU AT THE RATE OF $8.00 per barrel selling quality lubricants to auto and tractor owners, garages and stores. Sell now for immediate and spring delivery. We have been in business 40 years. The Manufacturers Oil and Grease Company, Dept. 12, Cleveland, Ohio.

AGENTS—MEN OR WOMEN, $300 A MONTH. Year round position. No layoffs. Take orders for Jennings New Style Hosiery. Written guarantee of satisfaction or new hose free. Write for outfit. Jennings Mfg. Co., Dept. 204, Dayton, O.

AGENTS WANTED TO ADVERTISE OUR GOODS and distribute free samples to consumers; 90c an hour; write for full particulars. American Products Co., 1515 American Bldg., Cincinnati, O.

WE PAY $200 MONTHLY SALARY, FURNISH car and expenses to introduce our guaranteed poultry and stock powders. Bigler Company, X-328, Springfield, Ill.

WE PAY $50 A WEEK AND EXPENSES AND give a Ford Auto to men to introduce poultry and stock compounds. Imperial Co., B-20, Parsons, Kan.

START YOUR OWN BUSINESS AS OUR SOLE agent, selling 100 famous home products. All or spare time. Dr. Blair Laboratories, Dept. 530, Lynchburg, Va.

EARN $25 MONTHLY, SPARE TIME, WRITING for newspapers. Exp. unnec., details free. Press Syndicate, 979, St. Louis, Mo.

CHICKS

DAY OLD CHICKS FOR SALE — STRONG hatched, healthy chicks. Thousands per week at low prices. Circular free. Old Honesty Hatchery, Dept. G, New Washington, O.

CHICKS—LEADING VARIETIES. OUR BIG illustrated chick book free. Comfort Hatchery, Box 735, Windsor, Mo.

BABY CHICKS—BEST QUALITY. PRICES LOW. 25 years' heavy laying. 73 acres. Catalogue free. Specializing White Leghorns, Barred Rocks, Reds, Buff Orpingtons. Goshen Poultry Farms, Goshen, Indiana.

Frost and the Fruit Grower

(*Continued from page 5*)

expense to many telephone companies.

Weather Map Should Be Clearly Understood.

The weather maps issued by the United States Weather Bureau should be clearly understood by all who use them. The region within the area of low pressure is called the trough or cyclone because winds whirl about the center. It is also called the storm because rain or snow and high temperatures usually prevail on the eastern side. On the western side the weather is clear and the temperature usually falling. The crest of the wave is usually spoken of as the anti-cyclone because the winds flow outward, the sky is clear and the temperature low. Frosts are most likely to occur on the western side of the cyclone and the eastern side of the anti-cyclone. Here is found the mass of cold air, imported from the north by the north winds, and augmented by the cold brought down from above by the gentle descending currents, the sky is clear, and as night comes on the air becomes quiet. Hence frost.

It is not possible to forecast frost 24 or 36 hours in advance without the aid of the weather map, but by observing the local conditions during the late afternoon and early evening it is possible often to determine whether a frost will occur before morning. Assuming that it is the frost season, the conditions to be considered are: First, the character of the preceding weather; second, the state of the sky, whether cloudy or clear; third, the direction and force of the wind; fourth, the trend of the temperature; and fifth, the atmospheric pressure.

Conditions to Be Considered in Determining Whether Frost Will Occur.

First, preceding weather. — The character of the preceding weather is important because damaging frosts often follow an abnormally warm period. While an unusually warm period does not mean always that frost will follow, yet the fact that most frosts do follow such periods should be regarded as sufficient warning that frost is likely to occur.

Second, state of sky.—Frost is not likely to occur when the sky is overcast, because the heat given off by the earth at night does not penetrate the clouds easily and is practically all retained in the air below them, which therefore remains at a comparatively high temperature. Even a hazy condition of the sky has an appreciable effect in retarding the fall of temperature at the surface. But on clear nights the heat escaping from the earth passes away quickly, almost without hindrance, far beyond the limits of the atmosphere. Hence the fall of the temperature at the surface is rapid and unless the earth has a vast store of heat, frost is likely to occur.

Third, direction and force of the wind.—The direction of the wind is a reliable indication of the approach of cold weather. If, after a day or two of warm southerly winds and possibly rain, the wind changes to the southwest or west, it is an almost unfailing indication that the warm spell is over, and it is well to watch closely the conditions that follow, particularly if there are signs of clearing weather. The conditions to be looked for as soon as the wind changes are: Falling temperature, decreasing wind, and a clear sky. Frost is not likely to occur unless the air becomes quiet and the sky is clear, for wind prevents the accumulation of the colder air at the surface.

Fourth, trend of temperature.—The rate of fall in temperature during the late afternoon or early evening is a good indication of the lowest temperature that will be reached during the night. For example, a temperature of 40 degrees at about 6 p. m. with a clear sky and light wind, is considered critical; particularly is this the case if the rate of fall approximates one degree for every two hours, which if continues—as would be likely with a clear sky and light wind—would bring the temperature close to the freezing point by early morning. A fall in temperature of two degrees an hour would indicate frost, even with the temperature considerably above 40 degrees in the late afternoon.

Fifth, atmospheric pressure.—The rate of change in the pressure of the atmosphere, as indicated by the barometer, is of some assistance in forecasting frost. The important factor is the rate of change. If the pressure is increasing rapidly, as indicated by a rapid rise in the barometer, it is a good indication that the cold period or cold wave is approaching rapidly.

Influence of Local Conditions on Frost.

Everyone who has lived in the open country is familiar with the fact that some places are more subject to frost than other places. Trees in one part of an orchard may be frost struck while others in the same orchard may escape. The explanation of this is found in the influence of local conditions.

There are four factors that determine the frost risk at any place: First, elevation and topography; second, proximity to bodies of water; third, exposure to the sun; and fourth, soil and soil covering.

First, elevation and topography.—Every farmer knows that frost is less likely to occur at moderate elevations or on low hills than in low places. There are several causes that operate to give elevated lands a greater immunity from frost than adjacent valleys enjoy. A valley is usually shaded for a longer time, both in the morning and the evening, than are the uplands and therefore it goes into the night with a smaller store of heat with which to combat the frost. This, however, does not explain the immunity from frost on the hillsides that face away from the sun for a large part of the day, which brings us to the consideration of air drainage.

The cooling of the air at night begins at the surface, and when the layer of air in contact with the surface becomes cooler than the air about it, it also becomes heavier and begins to slide down the slopes for the same reason that water runs down hill. Hence the cold air accumulates in the valleys. When it leaves the hilltops, its place is taken by warmer air, which in turn is cooled by contact with the cold surface, and becoming heavier, starts on its journey to the valley. Thus a gentle circulation is maintained through the night.

It has been noted in many cases that any obstacle such as a fence, row of bushes, windbreak, etc., across a slope may be of significance in creating a slight frost. As the cold air passes down the hillside and meets the obstacle it passes over it and alights again some distance on the other side of the obstacle. This leaves a pocket of dead air wherein frost can easily occur.

Second, proximity of bodies of water.—Under similar conditions land warms and cools about five times as rapidly as water. For this reason, the air over large bodies of water usually is cooler than the air over adjacent lands. During the winter months the temperature of the water is lower to such a point that seas and lakes remain comparatively cool throughout the spring and exert a twofold influence on the temperature of the air for a considerable distance inland: (a) the cold air from above the water tends to retard vegetation until the period of spring frosts has passed; (b) since the air over the water partakes of its temperature, which is considerably above the freezing point during the period of spring frosts, it tends to hold the temperature of the air on adjacent lands, particularly at night, above the point of danger. In the fall the water gives off the large quantities of heat stored up during the warm summer months and wards off frosts.

Third, exposure.—Hillsides exposed to the south are warmest, next come those facing the east, then those west and finally north. Frost liabilities follow in the reverse order, being greatest on the north side. In the eastern states many fruit growers prefer the northern slope for an orchard site, notwithstanding its greater liability to frost. This preference is based partly on the opinion that the colder soil and air of the northern slopes tends to retard the blossoming time until the period of spring frosts is passed.

Fourth, soil and soil covering.—Dark-colored, sandy soils, because good absorbers of heat, are least liable to frost. It has been the practice of many growers of cranberries to cover the surface of the bogs with an inch or two of sand as a means of protection from frost. The sand stores up heat by day with which to combat frost at night. Well drained soils are less frosty than poorly drained soils, because when the soil is wet, the heat from the sun is expended in evaporating the water, and not in warming the soil. Good tillage reduces the frost risk, because a loose, porous soil absorbs more heat than a hard, compact soil.

Grapes for Home Vineyard

(*Continued from page 7*)

at least some prominent sections, the spraying methods are not as thorough as is true with orchard fruits and leafhopper, grape-berry worm, mildews and black rot take their toll. On the other hand, pruning is usually better understood, or at least some definite system is more in mind than with the average orchardist.

Tillage methods should be thorough in order to keep down weeds, stimulate growth, and destroy the pests that hibernate in the soil. While excessive growth is to be avoided, a strong, healthy foliage is essential to maximum crop production. A cover crop of a legume, or even oats or buckwheat, aims to keep the soil in good tilth and supplies nitrogenous materials. Some growers omit a cover crop because they fear excessive growth, but it is doubtful if a case can be made against the cover crop on many soils if it is sown at the right time and disced early in the season. It has been our practice to distribute the litter (not the clear droppings) from the poultry houses through the centers of the aisles during winter and then apply 600 lbs. of acid phosphate in the spring. This vineyard yielded at the rate of 4½ tons to the acre last year and a little less than two-thirds this season. Superior varieties, systematic pruning, good cultural practices and thorough spraying will make the home culture of the grape possible over a rather wide territory.

Wire Bracing of Fruit Trees

(*Continued from page 10*)

proof, and the writer wishes to caution any grower who contemplates installing this system not to get the screw eyes or staples too low on the main limbs as breakage above the points of insertion is sure to occur if the above mistake is made. Also good judgment should be used as to the sizes of screw eyes and staples used in various sized limbs to avoid splitting.

Circular 244 of the college of agriculture explains the Central Wire Bracing system in detail, and can be secured by writing to the Davis or Berkeley pomology office.

Awarded Wilder Medal

THE AMERICAN Pomological Society at its recent meeting in New York awarded the Wilder medal for new fruits for superiority to the Lobo apple, which is an early McIntosh type, originated by the Central Experiment Station at Ottawa, Canada.

A medal was also awarded the Cortland, one of the most promising new varieties originated at the New York State Agricultural Experiment Station at Geneva. The Cortland is a McIntosh seedling, it hangs on the trees unusually well, it is said to mature about a month later than the McIntosh and in parts of New York some believe it will be a variety which will gradually replace the Baldwin.